DOMESTIC ENGINEERING

The Plumbing and Heating Weekly

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Not How Good but How Cheap

NOW comes "The Saturday Evening Post" with an article which it should have been ashamed to print. The article (November 24) is headed, "I Beat the Building Game," and is by Harold Cary, whoever he is. The only remarkable thing about the article is its general air of cheapness. In other words, a man, who regards his time as nothing, his health as nothing, his comfort as nothing, sees how cheaply he can build, plumb and heat a home. He tries to make out that he built a $12,000 home for $4,709.49, which, of course, he didn't.

Mr. Cary says he thinks the plumbers tried to "gyp me." So, not to be "gyped," he went bargain hunting among junk dealers who call themselves jobbers. His plumbing job, such as it is, cost him, so he says, about half as much as a real plumber offered to furnish real fixtures and do real work for. It seems he was compelled to get a first-class heating contractor to do the heating. This contractor, who, by the way, had bid on the plumbing, exclaimed, when he saw the finished work: "I did the heating, but don't tell anyone I did the plumbing. Lord, what a job!"

If "The Saturday Evening Post" knew as much about plumbing as it knows about publishing, it would know that such an article tramples upon trade ethics. Articles of this kind are a positive injury to legitimate manufacturers, jobbers and dealers.

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Robert Owen, the world's first great business man, once said: "Anybody can cut prices, but it takes brains to make and sell a better article."

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Hard On Bathing

THE latest from Germany is that a cake of toilet soap over there costs thirty million marks. Because of this cost bathing has become a rare luxury. Few German homes now have hot water, and public and private bath houses are closing.

The regular or frequent bath, at best, is a habit. When the habit of bathing is done away with, what happens? An individual or a nation—it's all the same—quickly goes to seed.

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Plumbing and heating amount to about fifteen per cent of the cost of a new home.

To Know is To Do

IT'S all a matter of education. That's all. For example, a little while ago a Central West jobber decided to cut out the sale of low grade goods. He centered his efforts on quality and not on price. And, in thus centering, he and his salesmen centered upon the education of their plumbing and heating customers. What are the results? Many customers, who used to think more of price than of quality, are now buying the best goods and paying from ten to fifty per cent more for them.

Yes, knowing is all a matter of education. And to know is to do.

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Don't wait until tomorrow to neglect the things you should neglect today.

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The Way It Should Go

THE nub of the whole Christmas sales business lies in educating the public to go to plumbing and heating shops to find the things they want to give as presents. Until people are educated in where to go, and why to go there, Christmas sales are not going to be as big as they ought to be.

"When is the best time to begin the education of a child?" wise Mr. Emerson was asked. And he wisely answered, "A hundred years before it is born." And so, too, with Christmas plumbing and heating sales. The time to begin selling is long before the sales are to be made.

Down through the years people have not thought of going to plumbing and heating shops to do their Christmas buying. Naturally they are not going to change old habits for new without a deal of effort on the part of plumbing and heating men.

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Few of us know a thing for sure until we tell it to someone else.

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Chasing or Chased

HOW about it? Are you chasing your job or is your job chasing you? There's a great difference between chasing and being chased. The man who is chasing his job, knows his business and is getting ahead; the man whose job is chasing him, doesn't know his business and is getting behind.

Make up your mind to be a chaser.

Four more reasons why Mueller employes enjoyed their outing. Here is Mr. Fred Mueller at the H. Mueller Mfg. Co.'s picnic, with Miss Louise Stubbs at the left of the picture, and Miss Frances Cruikshank and Miss Dorothea Christian at the right

H. W. Kuhlman, of Crane Co., Brooklyn, John Creegan, Edward Ison, Robert Kenning and J. Frankfort, of Brooklyn, at the Brooklyn heating contractors' outing at Glenwood, L. I. These men represent the leading heating contractors of Brooklyn Borough

When this was taken in 1881, E. D. Hornbrook of Kansas City, Mo., had an idea that is somewhat prevalent even at this time, that a master plumber should also be a journeyman. When his business failed he found where he had made a mistake and ever since he has been master of his business as well as master plumber

If this picture were of the vintage of 1923 instead of 1914 we would suspect a reason for the pleased smile or two, as this was taken at Havana, Cuba. R. Cecil Heap, of Grand Haven, Mich., is standing with Laurence Quesada, of Havana. R. Ed. Cook, also of Cuba, is seated to the left of M. W. Schlingmann and F. W. Terwilliger, of Toledo

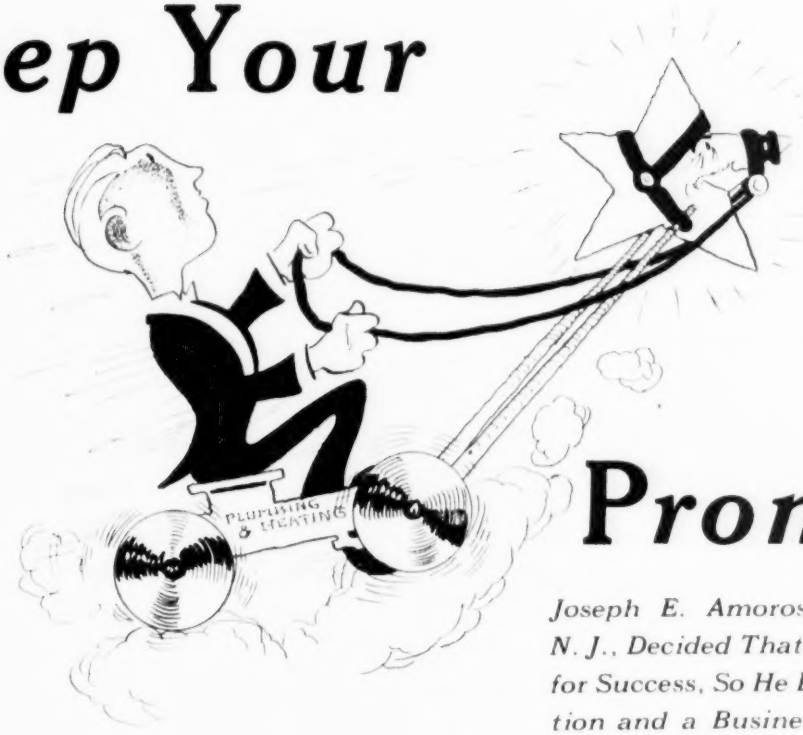
J. M. Slattery, of Laurens, S. C., recently started in business with his father. Before that he worked for Uncle Sam in the marine plumbing service and the Bassler Plumbing Co. of Columbia, S. C. The family is well represented in the plumbing field, as two brothers are also plumbers

Keep in mind the picture contest for December. This will consist of 3 prizes—$5, $3 and $2. Send in as many pictures as you can as all are welcome. Send them before 5 P. M. Dec. 31, the closing date for December. One prize winning picture of the December contest will be published each week during January.

Robert Engstrom, master plumber, chief telephone operator and postcard writer for master plumbers employers association, Jacksonville, Fla.

Photograph, 1913, of first annual outing L. O. O. K.—Loyal Order of Kibitzers—on Lake Erie. Back row: Geo. W. Wood, Chicago; T. J. Norton, Pittsburgh, H. A. Schlingmann, Toledo; H. J. Harte, Wilmington; F. F. Bulkeley, Cleveland; T. J. Gifford, Toledo; R. H. Van Buren, Sturgis, E. W. Henger, Waterbury; and John Hartman, Chicago. Front row: M. W. Schlingmann, Toledo; R. R. Rabe, Chattanooga; A. F. Morency, Sturgis; B. H. Baroset, Toledo; Richard Colling, Cleveland; F. W. Terwilliger, Toledo; and K. A. Senf, of Toledo

Keep Your Promise



Joseph E. Amorose, of Orange, N. J., Decided That Was Necessary for Success, So He Built a Reputation and a Business by Doing It

By P. E. Charleston

STATISTICS aren't right at hand, but there probably is not a week goes by that some man does not decide to go into the plumbing business. Of course, to decide to be a plumber is not the long straight road to being one. It is only the first step. Resources should be carefully reckoned, preparations should be made, and a definite line of action should be adopted. Whether the man starts in the basement of his home or in a big shop on the main street of his town, he should have a mighty good idea of just what kind of a plumber he is going to be.

Oscar Watt, of Tulsa, Oklahoma, you may remember, wanted to be a plumber, and he wanted to be a good one. He became a plumber, and became a good one, too. But the decision to be a plumber was only the first step, and the preparations he made were the bus that carried him most of the way up the hill. He knew where he was going and he knew how to get there. Knowledge, ability and capital helped him hold the road. They were Watt's three R's.

Now every man hasn't Watt's three R's. In fact, they might not be another man's. But there is something in each man — natural ability, acquired ability, knowledge, capital or what not — that is the same kind of a bus that carried Watt on his journey.

Find it. "Know Thyself" is a pretty good motto for anyone, and it is the first essential of success in any line. The old saying that it is men who fail, not business, rather hits the point. Then couple "Know Thyself" with "Know Thy Business," and you know enough to go as far as you will ever desire.

HE KNEW HIMSELF

NOW, Joseph E. Amorose started in the plumbing business in Orange, New Jersey, fifteen years ago with a capital of fifteen dollars. That isn't the best start in the world for any business, and it isn't that good even when the fifteen has to go to the helper at the end of the first week, as Amorose's fifteen did.

But he knew himself and he knew his business. Talking in the language of money, and also of the crap shooter, his job, probably, was to grow that fifteen dollars to fortune. But he figured the fifteen would take care of itself if he took care of his business. So, his job was to take care of his business and his problem was how to do it.

When you come

right down to it, Mr. Amorose had nothing to lose except a few regular meals, and he had everything to gain. He figured that his main investment was his time and ability. He planned on how to make them pay dividends.

He studied thoroughly the place where he was to spend his time. He had faith that Orange would become a real residential town in its position of a half hour's ride from New York City. And he knew that plumbers would help make that possible. He also knew it was worth losing a little sleep to see that Orange plumbers did the work, and that Amorose in particular got his share.

He studied thoroughly the business in which he was to spend his ability. He knew it was a business that should be profitable. He knew men who had made it profitable, and he knew men who had not made it profitable. He studied the "why's" and the "why nots." And is it so surprising that he found considerable room for improvement?

He studied the resources which he was to spend. He had more in the line of a reputation than he had in the line of a bank account. So, then, that was what he had to spend—efforts in building a reputation. Building a reputation was one of the improvements for which master plumbers and heating contractors had room.

As he figured it, one of the worst failings of the plumber is his free promise making. Eager for work, a plumber will promise an urgent prospect that he will have a man on the job at a certain time. The time comes and no man is available. He will either pull a man from one job to make good his promise, or he will fail to keep the promise altogether. The first course causes a break in his service to one customer. The second causes annoyance and inconvenience to the other. Either one puts him in hot water. Either one is reputation-wrecking.

So Amorose riveted to the lining of his cap, "Keep Your Promise," and decided that he would keep it. "Why," he wondered, "was it so hard?"

Joseph E. Amorose, who hitched his business to a star, in a manner of speaking, and drove to success

HE BUILT A SPECIALIZED ORGANIZATION

THE answer, to Amorose, was that a man could not have the organization and the system capable of taking care of all kinds of work at all kinds of times. But couldn't a man build an organization and system capable of taking care of one kind of work at all kinds of times? Amorose thought so. That would make it possible for him to keep his promise.

But what kind of work should he build an organization and system to take care of? And the answer to that was whatever kind of work will predominate in a building season. What that would be would depend on conditions, and a knowledge of it would come from a study of conditions.

So, Amorose studied conditions. He studied trade reports. He studied local building activities. He made regular visits to the brick yards, knowing that when brick and building material were moving from the yards buildings were being built. He cultivated architects and general contractors.

And when, summing up the situation, he decided that there would be more garages built in Orange that season than any other type of building, he threw all his energies and his exclusive attention to garage work. He stocked up on sizes of material specified for garages. He drilled his men in garage installations. He let it be known that he was a garage plumbing and heating contractor, and only a garage plumbing and heating contractor. Bids that might come to his office for one or two family houses, say, were respectfully declined. "I am doing garage work only this season," was his answer.

He specialized. And the Ford garage, the Pierce Arrow garage, and most of the big garages and automobile salesrooms in Orange are Amorose plumbed and heated.

Maybe the next year he would decide that apartments were to predominate the building season in Orange. Then he would be an apartment man, and nothing but an apartment man. His selling campaign was based on his ability to do one type of work, and only one type of work at a time.

He had the overpowering argument that an organization and system, whipped into shape especially for apartment work, made him the logical man to get the contract. He was prepared to make a promise and to keep that promise.

Gradually builders in Orange and in the surrounding territory came to know that Joseph E. Amorose was a specialist in their kind of work. They came to know that he was able to do what he said and do it when he said he would. And gradually Amorose grew that fifteen dollars to fortune, for it did take care of itself when he took care of his business.

He goes even farther in his specialization. He specializes on one type of fixture. When experience proves that one type of fixture will do the work claimed for it, that it forestalls come-backs, and that it, by its work, is a recommendation for his plumbing, he uses it. From this it is evident that, while Amorose is a large buyer, he does not buy on price alone. He buys on quality, which is, in the long run, buying on price. He mentioned that many a fine mechanic and plumber is thought of as just the opposite, not because of his work of installation, but because of his installation of a cheap, short-lived fixture. For the public does not blame the fixture. It blames the plumber who installs it.

Another thing. Amorose seldom takes a job that doesn't carry both the plumbing and the heating. He can put a group of trained workmen on a job and get material to them with little more overhead for both ends of the business than if he were concerned only with one end. He proves this to the customer—that he is saving the customer money—and he gets both the plumbing and the heating.

CARRIES A LARGE STOCK

WHEN Mr. Amorose has fifty houses at a time, or a dozen large apartments, he doesn't take chances on a jobber being able to supply him with material. An organization that has built up a reputation for keeping its promise cannot afford to rely on anyone but itself. And because Amorose's money is made by perfecting an organization that works with the least possible amount of time lost, he always carries a stock that will take care of any emergency.

As he grew, his ability to maintain a stock grew. Now he never lets his supplies get below a certain level. One can always find thirty lavatories, twenty-five range boilers, a half carload of pipe, and a similar ratio of all supplies as the minimum stock in his warehouse. Close to $20,000 worth of material is always there, and when it sinks to that level, Amorose is in the market for more goods.

He buys in carload lots and takes advantage of every possible saving in price that comes with prompt payment and quantity buying.

He does more than store this material, too. Its presence guarantees that there are no idle moments about the shop. All wiping of joints is done there. Lead bends are wiped and stacked ceiling high. Ferrules are tinned. He has his range boilers specially tapped, so that connections can be made to them that require the minimum amount of space, the minimum amount of pipe and the minimum amount of labor.

Thus, material is delivered on the job in shape ready for work. Thus, each job goes up like clockwork. A man never sends into the shop for a pot and furnace. He sends in for a trap, and that trap is delivered to him ready to install. In every conceivable way Amorose saves time, material and labor. And that makes money.

He finds, too, that men like supervision. While all his men are well trained to read blueprints and do certain kinds of work, they are more efficient when he gets around to assure them that they are following the right lines. The average mechanic is a good mechanic, but usually he likes to have his decisions made for him.

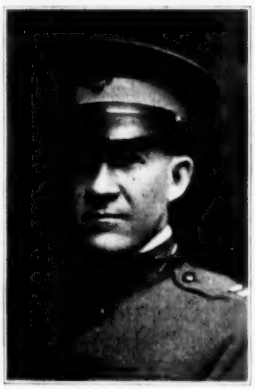
Amorose figured that the star to which he wanted to hitch his wagon was "Keep Your Promise." He knew himself, and knew he could do it. He knew his business and knew that keeping his promise would help him build that business. He just put it on a systematic basis.

Every man should know himself, and, if he doesn't, he should take up a day and night course in the subject at once. And assuming that every plumber knows his business, every man has the necessary equipment.

The moral of this little story is that one man applied the necessary equipment, and there is some point in business, concentration and work through which a reputation can be developed. Whether you can make money by keeping your promise, or whether you can make more money by failing to keep it, is really aside from the point. But have a definite idea or plan to follow. Amorose did, and he followed it to a mighty nice business. The man who doesn't have a plan to follow is likely to go on the rocks.

Years of Knowing How

This is a Slogan a Florida Firm has Made Mean Something



W. A. Joughin

THIS being the age of slogans—"A Bath a Day Keeps You Fit Every Way," "Heat by Radiators," "Hot Water for Every Need," "Say It with Flowers," and the like—it seems only natural that Joughin & Chaires, of Tampa, Florida, should choose a slogan to fit their individual business.

Getting into the spirit of things and taking advantage of the advertising afforded has been the "long suit" of the Joughin & Chaires company since its inception. A slogan is a boiled-down fact, so they decided the best boiled-down fact would be "Years of Knowing How."

They knew that they knew how, and they knew that they had known how for many years, so why not adopt the slogan, "Years of Knowing How?" Nothing could have been better, so they adopted it. That was several years ago. Today it forms a part of the firm name. Every piece of stationery, every circular, every envelope stuffer, every signboard—in fact, everything that bears the company name also bears the slogan. And the company advertises extensively.

W. A. Joughin, or rather "Bert," as he is more commonly known, had his first experience in the plumbing line in 1903. Since then he has served time as estimator, bookkeeper and buyer.

Jameson Chaires is the practical man, having spent about the same length of time in the business as has Mr. Joughin.

Both take an active part in civic and fraternal organizations. Mr. Chaires is a member of the Junior Board of Trade and the American Legion. Mr. Joughin is a member of the Executive Committee of the American Legion, Secretary of the Tampa Lodge of Elks, and a member of the Florida United Spanish War Veterans. He served as a captain during the World War.

When an office man and a shop man form a team, then you can be reasonably sure of success. "Years of Knowing How" means more to this Tampa firm than the mere slogan. It means study, both theoretical and practical. It means knowing how to make friends, knowing how to create customers, knowing how to sell goods, knowing how to do good work, knowing how to employ workmen that use their heads as well as their hands, knowing how to keep these workmen, and knowing how to produce a satisfied customer, so that he will not only come back but will recommend the firm to his friends.

But the know how isn't all that has built prestige for Joughin & Chaires. Personality, advertising and service have been factors. Meet either one of the partners and they have your complete confidence. They know how to talk their line and what they are talking about. They advertise these facts in the newspapers. They give service. "The Public is Always Right," is a sub-slogan.

That they are fair competitors is substantiated by the warm friendship they possess in the plumbing and heating fields. Alexander Orr, Jr., William Krumpe, John Quinn, Charles Heil, Charles Chapman and numerous others throughout the state value their friendship.

A few contracts this firm has on its books at the present time are the F. L. Wing apartments, Hillsborough High School, Bentley-Gray Dry Goods Building, Falk Building, Geo. Washington Junior High School, Boneta Theatre, Biaz Building and the Western Union Building.

The Madison Park & Pleasure Drive Association, Madison, Wis., will build a comfort station.

A $5,000 comfort station and band stand is to be constructed in Lummus park, Miami Beach, Fla.

The Board of County Commissioners, Sidney, O., is having plans drawn for an $8,000 comfort station.

Fifth Article of a Big Useful Series

Estimating for

Taking Up the Subject of

¶ Life is a kindergarten in which we learn what to do and how to do it. And so all courses of learning begin at the beginning and grow stronger and stronger as they go forward and upward. There is no other safe way. ¶ The instructive writer, or teacher, if you please, takes the stand that those who are to read know nothing about the subject. It may be that the readers know as much as the writer often they do—but for the purpose of instruction, the writer must assume

TOWARD the close of our last regular article we took up the subject of list prices on soil pipe, and showed how the cost of soil pipe is figured when the list prices and discount applying to them are known.

The next step in our estimating work is to learn how to figure the cost of soil pipe fittings.

With the ability to scale from a set of plans the soil pipe and fittings required, and then to carry out the list prices of pipe and fittings, and finally to apply the proper discounts, and thus obtain the cost of this material, we have actually made a good bit of progress into the subject of estimating.

Those who are familiar with the costs of various lines of plumbing material, will know that some lines are

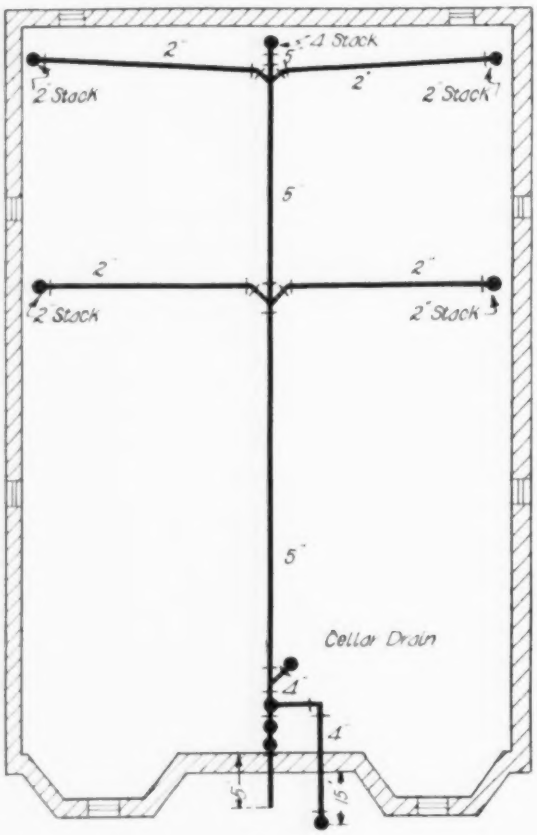


Fig. 1

The cellar plan of a six-flat apartment house

sold to the plumber at net prices, while other lines, such as soil pipe and fittings, are sold on a list price and discount basis. It is simply a matter of experience that enables the plumber to know at once which kind of price is applied to the various stock items.

As every one of our readers well knows, there is almost no end to the variety of soil pipe fittings. Not only is there a great variety of forms of fittings, but also many different sizes, and then also there are both extra heavy and standard.

EXTRA HEAVY FITTINGS

IN OUR work we will consider nothing but extra heavy. This will reduce the detail considerably, and, then again, standard pipe and fittings in most sections of the country, and especially in the cities and good sized towns, are very little used.

To show the great number of these fittings the writer has before him a pamphlet or book of 39 pages, 4 in. x 7 in., given up exclusively to tables showing these fittings with their list prices.

For use in connection with this work, it would be well for those who are following it actively to obtain one of these lists, for we shall refer to it often.

While it will be entirely out of the question for us to publish, in connection with this series, all the list prices, we shall show the most common lists, and try to include all that you will need in estimating work considered in connection with these articles. If, however, you find in your estimates special fittings on which we have given no list prices, it will be necessary for you to get the required list prices elsewhere.

When you are able to take a list of soil pipe and fittings, carry out list prices, and, with your discount, find what the cost of that list of stock comes to, we shall be in much better position to compare one man's estimate with another's.

For instance, we have given out a couple of problems in which we have simply shown where the main drain enters the cellar, together with the location of the different stacks, and have asked readers to make up their piping plan, and from it estimate the pipe and fittings required. Out of several piping plans there might be little to choose as far as excellence is concerned, in which case that plan would seem to be best which called for the least outlay in expense, and the only way this information can be arrived at is to get each man's cost on the soil pipe and fittings which his plan will require. Therefore, each reader should follow the rules, so that all may arrive at the same place.

Having reached this stage in our work, we shall henceforth find these comparisons of more interest than they have been.

the Plumber

By
R. M. Starbuck

List Prices and Discounts

that they do not. ¶ In this series on Estimating, it goes without saying that a great many readers know how to estimate. But no matter how much a man may know, he can always learn a little more. ¶ Therefore, the experienced man, as well as the inexperienced, can get ideas out of this series. If nothing else, the experienced can see just how much he knows, and know for sure that he knows it. And that's worth something, isn't it?

LIST PRICES OF FITTINGS

NOW then, we are going to give, herewith, the list prices of the more common fittings, and we ask that you preserve them for future use, unless you possess one of the lists which we have referred to.

In making up these tables we have not gone into sizes above 8 in. and in many cases have not gone into sizes as large as that.

Following are the tables:

Single Hub Bends

Size	Quarter Bends	Fifth Bends	Sixth Bends	Eighth Bends	Sixteenth Bends
2 in.	.55	.60	.45	.40	.40
3 in.	.70	1.00	.75	.55	.70
4 in.	.85	1.00	.75	.75	.70
5 in.	1.25	1.25	1.25	1.00	1.00
6 in.	1.55	1.55	1.55	1.25	1.25
8 in.	5.00	5.00	5.00	5.00	5.00

Sweeps

Size	Long Sweeps	Short Sweeps
2 in.	.90	.75
3 in.	1.15	1.10
4 in.	1.55	1.40
5 in.	2.00	1.85
6 in.	3.40	3.10
8 in.	7.50	6.00

Tees

Size	Price	Size	Price
2x2	.75	4x2	1.10
3x2	.90	4x3	1.25
3x3	1.10	4x4	1.40

Sanitary Tees

Size	Price	Size	Price
2x2	.75	5x4	1.70
3x2	.90	5x5	2.00
3x3	1.10	6x4	2.15
4x2	1.10	6x5	2.45
4x3	1.25	6x6	2.45
4x4	1.40		

Plain Crosses

Size	Price
2x2	1.55
3x2	2.00
3x3	2.00
4x2	2.15
4x3	2.15
4x4	2.15

Sanitary Crosses

Size	Price
2x2	1.55
3x2	2.00
4x2	2.15
4x3	2.15
4x4	2.15
5x4	6.15
6x4	6.15

Y Branches—Y or Half Y

Size	Price	Size	Price
2x2	.75	5x4	1.70
3x2	.90	5x5	2.00
3x3	1.10	6x2	2.15
4x2	1.10	6x3	2.15
4x3	1.25	6x4	2.15
4x4	1.40	6x5	2.45
5x2	1.45	6x6	2.45
5x3	1.55	8x8	9.00

Inverted Y Branches

Size	Price	Size	Price
2x2	1.25	5x3	3.05
3x2	1.85	5x4	3.85
4x2	2.15	6x3	4.60
5x2	3.05	6x4	6.15

Double Y or Half Y Branches

Size	Price	Size	Price
2x2	1.55	4x4	2.15
3x2	2.00	5x2	6.15
3x3	2.00	5x3	6.15
4x2	2.15	5x4	6.15
4x3	2.15	6x2	7.70
		6x4	7.70

Combination Y and Eighth Bends

Size	Price	Size	Price
2x2	1.30	5x4	4.60
3x2	2.15	5x5	4.60
3x3	2.15	6x2	6.90
4x2	2.15	6x3	6.90
4x3	2.15	6x4	6.90
4x4	2.15	6x5	6.90
5x2	4.60	6x6	6.90
5x3	4.60		

Ventilating Branches

Size	Price	Size	Price
2x2	1.10	5x3	5.40
3x2	1.40	6x2	7.70
4x2	1.40	6x3	7.70
4x3	1.85	6x4	7.70
5x2	5.40		

Ventilating Branches Tapped for Iron Pipe

Size	Tapping	Price	Size	Tapping	Price
2	$1\frac{1}{4}$, $1\frac{1}{2}$, 2	1.70	5	$1\frac{1}{4}$, $1\frac{1}{2}$, 2	3.50
3	$1\frac{1}{4}$, $1\frac{1}{2}$, 2	2.45	6	$1\frac{1}{4}$, $1\frac{1}{2}$, 2	4.25
4	$1\frac{1}{4}$, $1\frac{1}{2}$, 2	2.75			

Offsets

Size	Offset Inches	Price	Size	Offset Inches	Price
2	2	.75	3	8	1.55
2	4	.75	3	10	1.85
2	6	.90	3	12	2.00
2	8	.90	4	2	1.25
2	10	1.25	4	4	1.25
2	12	1.40	4	6	1.40
3	2	1.15	4	8	1.55
3	4	1.25	4	10	1.85
3	6	1.40	4	12	2.00

Offsets (Continued)

Size	Offset Inches	Price	Size	Offset Inches	Price
5	2	3.05	6	4	4.15
5	4	3.05	6	6	4.15
5	6	3.40	6	8	4.60
5	8	3.80	6	10	5.40
5	10	4.00	6	12	6.15
5	12	4.45	8	4	11.00
6	2	4.15	8	6	12.00
			8	8	12.00

Increasers

Size	Price	Size	Price
2x3	1.10	3x5	2.30
2x4	1.10	4x5	2.30
2x5	1.55	4x6	2.30
3x4	2.30	5x6	3.05

Reducers

Size	Price	Size	Price
3x2	.45	6x2	.75
4x2	.45	6x3	1.00
4x3	.55	6x4	1.00
5x2	.75	6x5	1.00
5x3	.75	8x6	4.25
5x4	.75		

Double Hubs

Size	Price	Size	Price
2	.45	5	1.25
3	.75	6	1.35
4	.75	8	3.50

Plain Traps
Full, Half or Three-quarter S

Size	Price
2	1.10
3	1.40
4	1.85
5	5.40

Running Traps
With Double Hub Vent

Size	Price
3x3	1.70
4x4	2.75
5x4	5.00
6x4	6.00
8x4	14.50

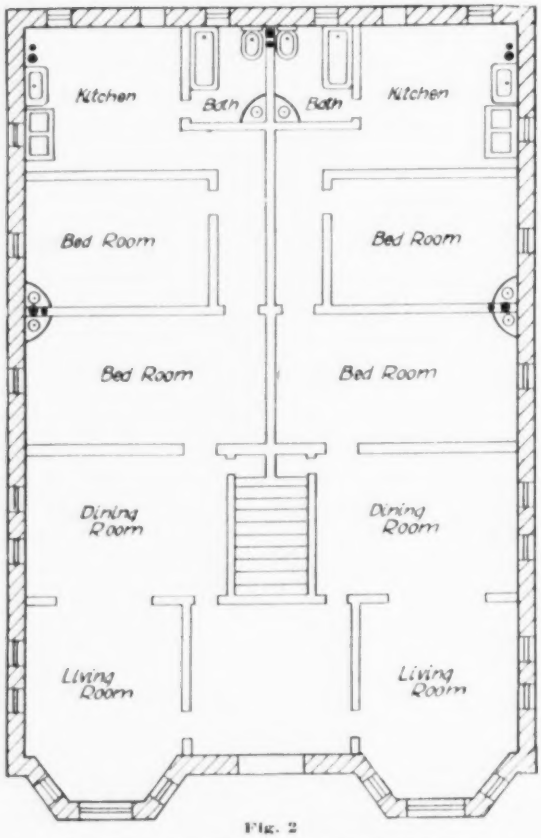


Fig. 2
The floor plan of the same apartment house

Combination Y and Eighth Bends with Trap Screw on Main

Size	Price	Size	Price
2	2.30	5	6.15
3	3.05	6	7.70
4	3.85		

For Side Inlets to Fittings, Add to Regular Lists, Viz:

2 in.	3 in.	4 in.	5 in.	6 in.
1.00	1.25	1.50	2.00	2.50

Tee Cleanouts

Size	Price
2	1.85
3	2.45
4	3.05
5	5.40
6	6.15

Vent Caps

Size	Price
3	.85
4	1.10
5	2.25
6	2.50

With the foregoing price lists as our working tools, we will next see how they are to be used.

LIST PRICES AND DISCOUNTS

WE OUGHT to say at this point that all of this work that we are going into concerning lists and discounts will be A B C to many of our readers, and some will want to know why we are taking up such kindergarten subjects. Our answer is that one of the chief purposes of this series of articles is to present the subject of estimating in its simplest terms, so that the one who knows absolutely nothing about these things may have given to him the wherewithal to work out for himself a working knowledge of the subject of estimating. And this means that we have to get back even to the definition of discount. To the "Old-Timer," however, we may say that when the beginner gets the right principles of this subject into his head, he is going to make a more intelligent competitor, and there is bound to be less indiscriminate slaughter in the making of plumbing estimates.

If there was never any change in the cost of things—in the cost of material and labor—there would be no need of list prices and discounts, but nowadays, more than ever before, perhaps, there is almost constant change, and this condition is met most satisfactorily by using a list price which never varies, and making the necessary variation by changing the discount. Thus, in the case of soil pipe fittings, how easy it becomes to give to each one of the hundreds of fittings a definite list price, and when these list prices are correctly made it is a very simple thing for the manufacturer, when he finds his cost of producing fittings has changed, to issue a new discount to cover this changed condition.

A discount is a deduction; and a percentage discount is nothing more than a discount figured in hundredths. Thus, a discount of 45 per cent is a discount of 45/100. If this discount of 45 per cent is figured on $1.00, 45/100 is deducted from $1.00, leaving 55 cents. If this discount is taken on $2.00, the amount remaining after taking the discount will be twice that on $1.00, or $1.10.

A discount may be expressed in three different ways—45 per cent, 45/100 or .45. In our work the last method, which is in the form of a decimal, is the one that will be used.

In getting the cost of an article, the amount which remains after deducting the discount is known as net cost.

To get the net cost, multiply the list price by the discount, expressed as a decimal, and subtract this amount from the list price. Thus, to find the net cost of a

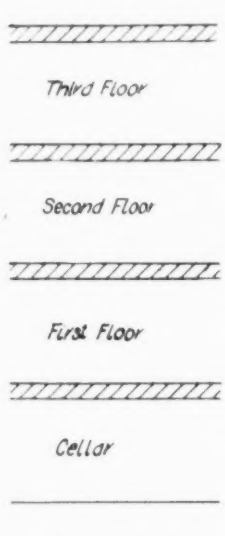


Fig. 3
This shows the elevation of the apartment house with six flats

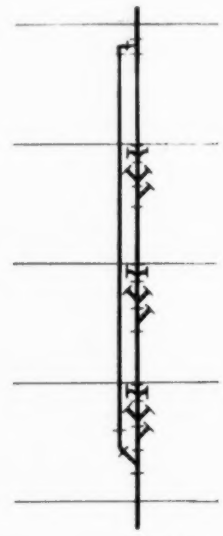


Fig. 4
Showing how to figure the fittings on the soil, waste and vent stacks

5x4 Y branch at 45 per cent discount use the following method:

$$1.70 \times .45 = .765$$
$$1.70 - .765 = .935, \text{ or } 93\tfrac{1}{2} \text{ cents.}$$

If you had to find the net cost on four of these fittings, you would multiply the list price by four, and then take the discount.

If you had a long list of soil pipe fittings to find the cost on, you would add up the various list prices, and take the discount on the entire sum. As the same discount applies on all the different fittings, you can see that there is a very great saving made in time by figuring the discount once on the total, rather than figuring it separately for each fitting and adding up the results.

To show clearly the method of finding the cost on a list of fittings, we show the following list, on which the cost is found at a discount of 29 per cent:

Quantity	Fitting	List Price	Total List
3	2 in. Eighth Bends	.40	1.20
2	4 in. Eighth Bends	.75	1.50
1	5 in. Eighth Bends		1.00
2	4 in. Sanitary Tees	1.40	2.80
4	2 in. Y Branches	.75	3.00
3	4x2 Y Branches	1.10	3.30
1	5 in. Y Branch		2.00
4	4x6 Offsets	1.40	5.60
1	2x4 Increaser		1.10
1	4 in. Plain Trap		1.85
3	4 in. Double Hubs	.75	3.00
			26.35
	Less 29 per cent discount		7.64
	Net cost		18.71

The above discount is obtained as follows:

$$26.35 \times .29 = 7.64$$

SOMETHING TO PRACTICE ON

FOR practice work, we are giving the following list of fittings, and would like to have those who are just beginning the subject of estimating send in their work to us, and we will gladly look the work over and tell them where they have made mistakes or give them credit for doing the work correctly. If you don't want your name to appear, sign any name or initials that you choose.

The list of fittings is as follows: 2 4 in. quarter bends, 3 5 in. $\frac{1}{8}$ bends, 1 3 in. 1/16 bend, 2 6 in. $\frac{1}{8}$ bends, 2 4 in. long sweeps, 2 4x2 tees, 3 4 in. sanitary tees, 1 5x4 sanitary cross, 2 2 in. Y branches, 3 4x2 Y branches, 4 3 in. Y branches, 2 4 in. Y branches, 2 5x3 Y branches, 2 4x3 double Y branches, 1 4x2 ventilating branch, 1 2x6 offset, 2 4x8 offsets, 1 2x4 increaser, 1 5x2 reducer, 3 4 in. double hubs, 2 3 in. plain traps, 1 6 in. running trap with double hub vent, 3 4 in. combination Y and $\frac{1}{8}$ bends with trap screw, 2 6 in. tee cleanouts, 1 4 in. vent cap.

With the ability to figure cost, we are able to submit a problem, which we hope "all hands" will take hold of in earnest, and send the results to us.

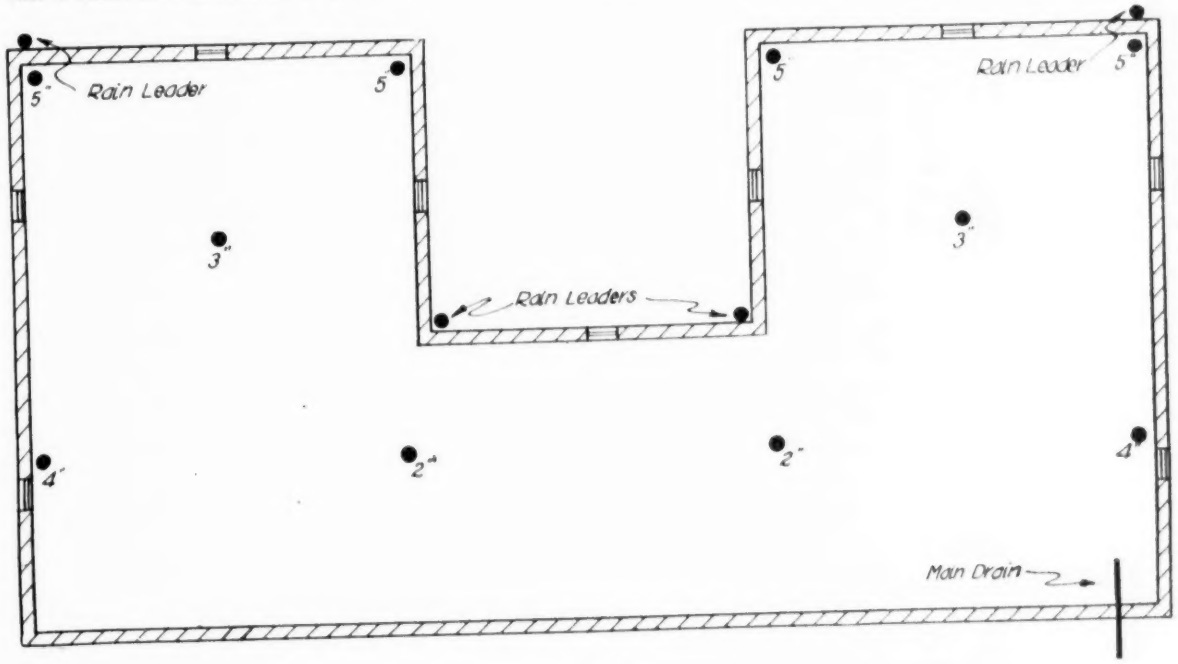


Fig. 5

Here is seen where the main drain enters the building and the location and size of the stacks

What we want is an estimate of the soil pipe and fittings for a six flat apartment house. We show the cellar plan in Fig. 1, the floor plan in Fig. 2, and the elevation in Fig. 3.

It is not necessary in this case to show a separate floor plan for each floor, for what differences there would be between the three plans would have no effect on the plumbing.

After you have obtained a careful and complete estimate of the pipe and fittings, please carry the cost out in the manner that we have already shown and get your total cost, using a discount of 30 per cent on the fittings and 45 per cent on the pipe.

Please work your estimate out exactly according to the plans, using the sizes we have named, even though you may have a different opinion concerning size. Figure on a main trap and fresh air inlet, carrying the inlet 15 ft. into the lawn.

Figure cleanouts wherever required, but in this problem do not figure on rain leaders.

In this problem please do not figure any further than

the fittings on the soil, waste and vent stacks. To show what we mean we refer to Fig. 4, which shows the bathroom stack with sanitary cross at each floor for the two water closets, a double Y for the bath tubs, and the single Y branch for the lavatories. Carry out the same idea on the venting, showing in your estimate only the vent fittings that are on the main vent stacks, including the vent fittings for the fixture trap vents, and the top and bottom fittings for tying the vent stack to the soil or waste stack.

The result of comparison of the various estimates submitted will be of value, for now that we are able to reduce it to a cost basis, the comparison becomes more definite.

A FREE-FOR-ALL PROBLEM

AFTER you have completed the foregoing estimate, sharpen your pencil and see what you can do with the problem presented by Fig. 5.

Whereas the first problem ties you down to something that is very definite, this problem, in a way, is a free-for-all proposition.

In Fig. 5 we have shown where the main drain enters the building, and in addition have shown the location and size of the various stacks. What we want is for you to make a complete layout of the cellar piping, having in mind a thoroughly good job according to the best modern practice, but, at the same time, making every endeavor to keep the cost down. This will mean that it will be necessary to size up the work so that your piping plan will cover the sanitary requirements, and, at the same time, use minimum sizes of pipe.

After making out your list, carry out list prices, and figure the total cost, using a discount of 31 per cent on fittings and 44 per cent on pipe.

Do not use a main trap and fresh air inlet.

Figure the area of the roof, and from this information estimate proper sizes for the four rain leaders. The previous regular article contains a table that will help you figure the storm sewer.

Estimate a separate storm sewer of proper size, and run same outside the building, making same of cast iron pipe.

On the stacks figure to bring them from the horizontal to the vertical but no further. For instance, if the stack is taken off a Y branch and eighth bend, include the bend, which will start the stack vertically.

This is quite a problem, full of interest, and we hope to get many to send in their estimates. Remember that you can do this under an assumed name, if you would rather not have your own name appear.

Special Note.—In order to give readers more time in which to work out the problems, the sessions of The Schoolmaster and His Class will, for a while, at least, be held every third week instead of every second week. Thus, instead of the Class next week, Mr. Starbuck will have an article dealing with Discounts. The next session of the Class will be in the issue for December 22.

Imitating Another's Advertising

A Recent Legal Decision of Exceptional Interest

THE United States Circuit Court of Appeals, Eighth Circuit, in reversing a judgment obtained by the plaintiff in an action by one company against another, says (288 Federal Reporter, 708) that the plaintiff's cause of action was that the defendant in the advertisements of its product in newspapers, magazines, and periodicals, had imitated those published by the plaintiff, and has made them so similar in appearance and wording to the plaintiff's that the ordinary person reading the defendants' advertisements would be deceived and believe that he was reading the advertisements of the plaintiff, and that the public was necessarily deceived and led to purchase the product of the defendant company, believing it to be the product of the plaintiff.

But, let it be conceded that the manager of the defendant company had appropriated and used in the advertisements and advertising literature of the defendant certain words, phrases, and sentences, and in general outline the pictorial representations appearing in the plaintiff's advertisements and advertising literature, what right of the plaintiff's was encroached upon? He had formerly been in the plaintiff's employ, and it was apparently the plaintiff's contention that the language of its advertisements, advertising copy and literature which he had prepared or assisted in preparing, or had been shown, was confidential information which he had no right to use in preparing the advertisements and advertising literature of the defendant company.

The manager's conduct may have been unethical, and reprehensible, but the things he was charged with doing, whether considered singly or together, did not in the remotest degree tend to prove that the advertisements of the defendant company were so similar in appearance and wording to the plaintiff's that the ordinary person reading those of the defendant would be deceived and believe that he was reading the advertisements of the plaintiff.

Words are but symbols. In combination they express ideas. They are not information; they convey information. Information conveyed by words may be confidential, not the words. There can be no monopoly of language.

No one may invoke the law of confidential information to deprive another of the right to choose his words. The party complaining of a wrongful use of confidential information must have some right to or in the subject-matter of the information claimed to be confidential, as, for instance, the formula of a proprietary medicine, or the right may relate to business connections. If the defendant company had been guilty of unfair competition, it was not because of the wrongful use of confidential information acquired by its manager during his employment by the plaintiff, but because of imitation of the plaintiff's advertisements and deception of the public. Unfair competition begins where imitation results in the deception of the customers of the party complaining. The similarity of a cut used by each party in this case was not such as to mislead, when it was remembered that the court was dealing with advertisements, and not with the dress in which the products of the respective parties were offered to customers over the counter by retail dealers. Similarity of dress is enjoined as unfair competition, because customers, calling for an article, do not stop to read printed names and addresses, or to observe differences which may distinguish the simulated article from the one called for. They are satisfied with general appearances. But a customer obtained through an advertisement must of necessity read the advertisement to become acquainted with the article advertised and to know the name and address of the advertiser.

Advertising Editorial

A NEW ONE EVERY WEEK—No. 106

The Ball *and* Chain

THE day is near when sickness will be looked upon as a crime. And why not? Sickness—the ball and chain of the human race—can, in most cases, be prevented.

Why are people sick? Usually because they have allowed the organs of the body to get out of condition, or they have violated the laws of nature.

Isn't it just as criminal to step on the laws of nature as it is to step on the laws of man? Then quit stepping.

Do two things and soon there will not be enough sickness to be noticed.

First, make it your business to see that the community is sanitary; that no decaying odors fill the air you breathe; that the water you drink and use is pure.

Second, have in your own home good plumbing, good heating, good ventilation. Take a daily bath—cold, cool, tepid, warm. Take the one that gives you a glowing reaction. The reaction keeps the organs of the body in condition.

Do these things and you will lose the ball and chain we call sickness.

Must It Be Said Again?

THE Advertising Editorials are just entering upon their third year. They must have served well or they could not have served so long. Then why should any master plumber or heating contractor who does advertising hesitate about using them?

Take an Editorial each week, put it into a newspaper space of fair size, add your name and address at the bottom, and see for yourself what the results are.

To make the Editorials more attractive—to make them linger longer in the public mind—use an illustration with each Editorial. Send $4.20 for a dozen illustrations—one a week. Ordered one at a time the illustrations are 75 cents.

Give Useful Gifts

The big, cheer-bringing
Pack of Santa Claus
Is loaded with many
Gifts.
Your gift is among them.
But sometimes Santa
Goes a bit awry
In his selection
Of Christmas presents.
Of course his heart
Is in the right place,
But sometimes the
Gifts are rather useless.
So, before the happy
Day dawns, why not
Whisper to the fat,
Bewhiskered gent that
If it's all the same
To him, you'd like to
Find a useful gift in
Your stocking?
Bathroom and kitchen
Conveniences; hot water
Heaters; bath sprays;
Showers—those are
Useful, beneficial, ever-
Lasting gifts.
And certainly,
Santa Claus
Won't mind bringing
One of them to you.
It's worth trying, anyway.

Tell Your Public

ONCE a week regularly clip or typewrite one of the little stories like the story "Give Useful Gifts," printed above. Then hand the story to your local editor for him to reprint in his paper.

He will reprint it. Sure he will. He is looking for such "fillers," as they are called.

People will read the stories week after week. And you will see grow up in your community a greater interest in everything associated with plumbing, heating and ventilating.

These little stories are not advertising. They are stray bits of information, general popular education. They supplement the Advertising Editorials.

If there is one thing you need in your business it is an educated public. Well, then, educate it. If you don't, who will?

Only those who are educated to want the things you have to sell, buy them.

Solving a Hot Water Heating Problem

This Problem was Originally Given to Our Readers on October 27

Through the Help of Several Readers this Heating Problem has been Solved

By John K. Raymond

IN the issue of "Domestic Engineering," October 27, page 166, a problem of erratic hot water circulation was explained in some detail. Two radiators on a certain pair of risers in an ordinary residence were working properly most of the time, but on at least two occasions the circulation through them stopped quite suddenly. The radiators remained warm at least, and it was noticed that the feeble circulation remaining in them was due to a reverse action.

Although these radiators continued to work satisfactorily for months at a time, when the erratic change appeared the slight circulation going through them would come up through the return connections and go down through the flows. No doubt the most valuable part of the article was that which revealed a quick and easy remedy for the difficulty. On the first complaint a heating contractor had emptied the system and disconnected a number of lines of pipe in order to examine them for an obstruction. Nothing was found wrong with the pipes, and when the system was filled and a fire started the two radiators worked properly again.

Since no change or remedy had been applied to the pipes, it meant that the mere emptying of the system and filling it up again had proved to be a remedy, if not a lasting one. It was more than two months later, in the winter season, before these two radiators refused once more to work correctly. The radiators are shown in the accompanying drawing, Fig. 1, and are marked "A." On this second occasion the heating contractor in the case, being sure this time that the piping connections were clear, merely turned off the valves on all radiators in the house and waited to see if the circulation would begin in the two faulty ones. It happened that these two radiators began to heat properly at once, and the writer has learned since that they continued to circulate satisfactorily for the rest of the heating season.

During the present heating season these radiators have continued to work properly since the fire was started, early in October. The problem which they present, however, is undoubtedly a valuable one for practical heating men. And several replies received by "Domestic Engineering" demonstrate the high quality of its readers as competent heating engineers ready and willing to give the benefit of their experience for the information of others. While the two radiators in question have not been changed in any way as yet, they will surely be improved properly the next time they give any trouble, thanks to the helpful suggestions of readers.

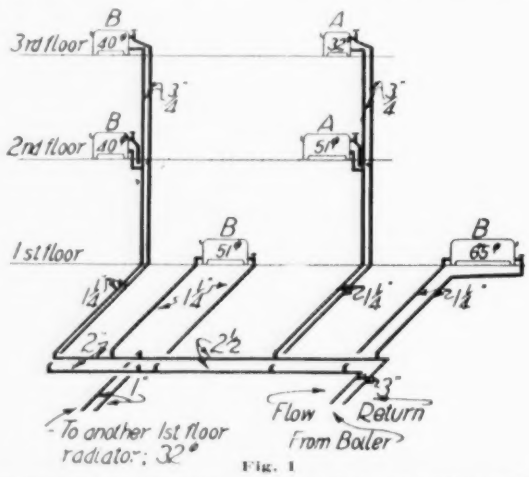


Fig. 1

Radiators A gave trouble. Radiators B always worked right
Republished from October 27 issue of "Domestic Engineering"

KNOWLEDGE FROM EXPERIENCE

TO gain the proper value from this experience, it might be well to emphasize that on one occasion, when the two radiators were circulating only feebly in the wrong direction, a remedy proved to be in the turning off of valves on other radiators in the house and thus forcing the full circulation through the two in question. This measure demonstrated that the radiators would work properly under the right conditions. And it is well for heating men to bear this device in mind. When certain radiators have worked correctly for months, and suddenly go wrong, it is easy to conclude that there must be some stoppage or air pocket in the connecting lines. And especially when the circulation is reversed in the radiators would this appear to be so. It seems, therefore, that a proper test at all times in such circumstances is to turn off other radiator valves and thus possibly save considerable time and labor. It would be no harm, of course, to examine lines to be sure that they pitch correctly, and also all air valves to be sure that radiators are full of water and free of air.

This installation demonstrates what all experienced hot water heating men are presumed to know, that is, the motive force in a hot water circulation system is unquestionably delicate and of low impulse on many occasions. All the experience and good judgment called for in hot water heating work means that this type of heating requires capable handling at all times. The difficulties will come when jobs are any way out of the ordinary. So

many hot water installations are installed in typical residences that little watchfulness is required; but just as soon as a residence becomes large or irregular it is time to supervise closely for the phenomena or peculiarities characteristic of hot water heating.

THE PROBLEM IS ANSWERED

IF these two radiators worked well for a considerable period, why should they suddenly go wrong? The answer to this has been given by D. F. Stevenson, of the Bishop & Babcock Co., Atlanta, Ga. Says Mr. Stevenson: "From the information given I am inclined to think that the riser feeding radiators marked "A" is run in an exposed location, and very probably subject to more or less intermittent flow of cold air from the roof to the basement. This flow of cold air rapidly chills the water in the small ¾-inch pipe, thereby setting up a reverse action back as far as the main, where the normal flow of the system picks up and carries it along instead of counteracting it. . . . It is my guess that both times when this reverse action was experienced the weather had suddenly turned cold."

The writer went back to this particular job in order to inquire as to the possibilities of Mr. Stevenson's observation. At first it appeared the theory did not fit the case, because the risers to these radiators are not exposed, especially not behind studs, as Mr. Stevenson suggested in a part of his letter not quoted. But the fact remains that he was right in theory, because a member of the household, living in the room on the second floor, where a 51-foot radiator is placed, has a habit of sleeping with windows wide open, and thus both radiator and risers could get chilled.

The young man who has this room may not keep the windows open in bitter cold weather, and ordinarily he will cover the radiator with a blanket or something else when the weather is known to be cold. There will be times when the weather is moderate, however, and he will go to bed with the windows open and neglect to protect the radiator. When asked about specific instances he admitted that on the two occasions, when the radiator refused to work, the weather had grown exceptionally cold late in the night before, and that the radiator was uncovered. This seems to be conclusive proof that where a radiator in a house, or its risers, are permitted to become chilled by unusual cold, the circulation can be upset.

The radiators in this house are connected with the flows at the top on one end and returns at the bottom same end. With a window open, the incoming cold draft would hit the top of the radiator and the flow valve with its connection. It is surely sufficient to demonstrate that, particularly when the fire is low in the early hours of the morning, the circulation will be so chilled as to cause a complete stoppage of it, which, at the same time, will have the effect of starting an up-flow through the return connections. The return connections, under the circumstances being somewhat away from the icy draft coming in at the window, are bound to be warmer than the flow. That explains the commencing of the reverse action in these radiators and, incidentally, is a point of good, practical heating data.

LOOKING AT THE PIPING CONNECTIONS

THIS reverse circulation would not set in so easily, however, if piping connections in the basement were installed according to a drawing submitted by William Smedel, heating contractor, 492 East 164th street, Bronx, New York City. It is not necessary to repeat Mr. Smedel's drawing, for it follows the outline in the accompanying illustration. In the actual job as installed all branches from the mains are taken from the top on a pitch of 45 degrees. Mr. Smedel's recommendation is that practically all flow and return connections nearer to the boiler be taken from the side of the mains, and in the instance of radiators "A" the flow branch be taken from the bottom of the main.

The writer knows this to be good practice, for he has followed it always in his own work. Particularly should radiators near the boiler have return connections made to the side of the mains, or carried back separately to a kind of return header at a low point near the boiler. There is never any reason whatever why return branches from a main should pitch up on an angle of 45 degrees or of 90 degrees. It seems to assure better circulation, particularly the preventing of reverse circulations, where the returns run flat into a main. Certainly the flatter they are the more natural is the run of water through them. It is conceivable that a flow should pitch up; but a return is no more than a drain carrying water back as quickly and directly as possible to the boiler. But even flow connections should not pitch up too soon after leaving the boiler, as Mr. Smedel points out.

ANOTHER READER EXPLAINS

IN a similar way the proper installation of such radiators is capably told by Charles W. Miller, heating and ventilating engineer, of Milwaukee, Wis. Says Mr. Miller: "This is not an uncommon experience. If Mr. Raymond will stop down valves on the two 40 ft. radiators coming off end of main, that is, put in a small disk or solder up the openings in these feed valves, it will improve the circulation.

"Or the best thing to do," continues Mr. Miller, "is to run a separate return back from the 51 ft. and 32 ft. radiators and connect it up below what would be the normal water line in a steam boiler. That is, get the separate drop and tie it in as low as possible, say, on a line with return opening into boiler. The trouble here is that radiators from end of main heat first, then back up or try to through return line to A radiators. Using a separate return line back to boiler gives the additional drop and relieves the trouble.

"Had a job one time," adds Mr. Miller, "in which one radiator tied up the circulation on that whole end of the apparatus. If more low down returns were used in connection with hot water heating jobs there would not be so much trouble. I have designed several hot water heating plants in my day, and on any plant that I designed and used a return line run along the wall near the floor, I never had any trouble with reverse circulation, as I call it."

The writer believes that Mr. Miller has hit the nail on the head, owing to the fact that the radiators at the end of the main hold considerably more water than that held in radiators "A." It is the weight of water in a hot water system which provides the motive force manifested in the circulation of water. The lines of pipe leading up to the various radiators can be described as thin connecting links. There centers at each radiator a considerable body of water of more or less weight, according to the size. When the water is heated in the boiler it expands to a certain extent and thus becomes lighter. Instead of flowing up through mains and risers, as it is ordinarily considered, this lighter water is really forced or pushed up by the collection of heavier water which rushes into the bottom of the boiler through the return.

Thus it will be seen that a hot water system is really a number of radiators draining as quickly as possible into the bottom of the heater. The movement is commenced because the cooler and heavier water is released at the top, due to the inflow of heated and lighter water. It follows that a certain amount of inequality of circulation

is bound to occur where some radiators are larger than others. The water in the larger radiators is heavier and naturally tends to descend more quickly. Thus Mr. Miller is right when he recommends low returns or restricted flow inlets, because this will tend to adjust many inequalities of circulation. And certainly it will eliminate all instances of reversed circulation, which would be due to some radiators heating more quickly than others and thus causing a "bucking" action in the return main.

A reference to the illustration will reveal that radiators "A" and "B" are approximately the same in size. Radiators "A" on the risers total 83 ft., and radiators "B" total 80 ft. Experience with this job has demonstrated that radiators "A" will circulate properly under normal conditions. The trouble came when they were excessively chilled at a time when the fire was low, and then the two radiators at the end of the main began to circulate a little more strongly. In the meantime the flow to radiators "A" had been almost stopped by the chilling blasts, and thus the return water from the radiators on the end of the line began to flow up the returns to radiators "A." In other words, the balance, so far as weights are concerned, between these two radiators on the high risers, is about equal, and should work properly under normal conditions. Under abnormal conditions, where some of the radiators would be excessively chilled, the balance is upset. The value of this discussion, however, lies principally in the fact that if the piping connections had been installed, as recommended by Mr. Miller and Mr. Smedel, the circulation balance could not be upset so easily. Mr. Stevenson has pointed out the cause of the trouble, and the other gentlemen the remedy.

ANOTHER ANSWER ARRIVES

THE foregoing article had been written, and was ready to be printed, when an explanation was received from Edward McGowan, head of the McGowan Plumbing Company, 277 Madison avenue, Memphis, Tenn. Mr. McGowan explains the trouble in this way:

"In my judgment the trouble is that the branches to the two radiators on the first floor are too large. The diagram shows them to be 1¼ inch. The hot water goes into these two radiators and returns to the return main before the hot water gets around to the return main from the radiators on the second and third floors. As soon as this hot water reaches the return main from these two first floor radiators, it has a tendency to back up in the return main and causes sluggish action in the return. After it gets hotter it will back up in the return to the radiators on the second and third floor marked "A." If the connections to these two first floor radiators were changed to ¾-inch we believe your trouble would be eliminated."

If there are any other readers who would like to express themselves on this subject, they will be welcome.

Effect of Materials on the Heating of Buildings

By James Mackay

HEATING contractors are often puzzled as to why, in the first season of operation, a larger amount of coal is burned than should be the case normally, in jobs they have installed and on which all the elements of heat loss, and generation of heat in the boiler are found to be in accordance with good practice.

It will be found that installations which have been made in buildings which have been erected with temporary heat do not have this complaint when the owner fires the plant for his first season the following fall, which is the second season for the plant. But it is well known that temporary heating jobs take an amount of fuel out of all proportion to the calculated heat losses. It is usually ascribed to the careless and inexperienced attention given the plant while in the hands of the building contractor.

The real reason for the excessive fuel bills, however, lies in the fact that in addition to the ordinary heating load the plant has the additional task of seasoning and drying out all of the materials in the new structure. If the building is erected in the summer this added load falls on the owner's coal bill, while if the building goes up under temporary heat during the winter, the building contractor foots the bill. In any event the heating contractor may be prepared to assign the reason the next time he gets such a complaint.

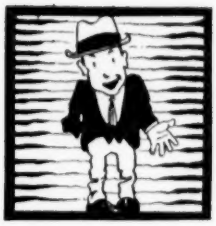
Buildings which give this trouble in very great degree, are those of concrete construction and especially concrete floors and concrete roofs. A concrete structure put up in the summer or fall, still retains a tremendous quantity of moisture, not only adding to the heat loss through the material, but also absorbing a great quantity of heat to do the evaporating.

Sometimes the material stored in the building will have a pronounced effect on the heating.

The writer recalls one case on which he was the heating contractor. It was for a steel sales company at St. Louis, and the contract was for heating a new steel warehouse. The building consisted of one long loading and shipping house, with two wings, one extending at right angles from each end of the loading house. In the first contract one of the wings was omitted. The building was erected in the late spring, the heating apparatus being installed during the summer. During the summer and early fall the buildings were filled with steel bars, sheets, etc. When heat was turned on no difficulty was experienced in raising the temperature to the required degree.

Late in the year it became apparent that the omitted wing would be needed, and construction was begun. As soon as the roof was on, they began unloading steel into the new wing, and also started to put in the heating apparatus. Due to various interferences, the building was not ready for heat until well on to February, and in the meantime millions of pounds of steel were put into the building at a below zero temperature. When heat was turned on, it took nearly a month before the temperature could be raised and maintained within the new wing.

The late Professor John R. Allen once mentioned two cases where the heating of the buildings is affected by the material in a most pronounced manner. One of these is the Hill Auditorium, which is the Great Assembly Hall attached to Michigan State University at Ann Arbor, Mich. This is a concrete structure, heated by a plenum fan system, delivering heat into the Auditorium through mushroom floor inlets from a big plenum chamber located below. Complaints had very frequently been made that a sense of chill was experienced by those in the building, even though the thermometers registered 68 degrees, and the humidity was correct for that temperature, and the thermostats were cutting off the steam at the coils. At times several days intervened between the times the building was used; it had been their practice to begin the heating two hours before the audience assembled.



Domestic Engineering's Calendar of Fact and Fancy

DECEMBER

By Albert W. Barker

1.—H. T. Lally decides to open San Francisco jobbing house, 1904.

Germany still leads the world in the visible supply of brass, 1923.

2.—P. H. Murphy, master plumber, elected alderman in Milwaukee, 1892.

Belief grows that Statue of Liberty marks western boundary of freedom, 1923.

3.—Baltimore lighted by gas, 1816.

A farmer blows it out in his room, creating the first serious joke, 1816.

4.—M. E. Herbert, St. Joseph, Mo., patents hot water heater, 1892.

Scanty clothes on women found to be due to both poverty and fashion, 1923.

5.—J. H. Williams, founder of company bearing his name, Brooklyn, N. Y., dies, 1904.

Europe's royal coffins found to be too full and royal coffers too empty, 1923.

6.—Wm. A. Russell, New York City, patents radiator valve, 1898.

Noah is first man not waiting for his ship to come in. He builds it, 3000 B. C.

7.—H. C. Werlin appointed plumbing inspector in Columbus, O., 1904.

A doctor treats patient for indigestion when patient could afford appendicitis, 1923.

8.—Wm. P. Skiffington, New York City, granted patent on the use of air lines in vacuum heating, 1891.

Blondes weigh less than brunettes, due to lighter complexion, 1923.

9.—M. D. Helfrich, Evansville, Ind., patents closet bowl, 1904.

Bootleggers compelled to print antidotes on booze bottles, 1926.

10.—Geo. L. Wallace opens plumbing shop, Evanston, Ill., 1892.

Due to money values, a Russian who feels like thirty cents is wealthy, 1923.

11.—San Antonio, Tex., adopts a plumbing code, 1892.

A pawnbroker's son becomes hockey champion, 1924.

12.—L. A. Cornelius, Grand Rapids, Mich., patents faucet coupling, 1904.

A novelist goes swimming and dies of writer's cramp, 1927.

13.—First American radiator in London, 1894.

Modern youths now carry their cigarettes in whisky flasks so mothers won't know they smoke, 1924.

14.—C. H. Muckenhirn, Detroit, patents water closet, 1892.

Thousands of tourists start west to enjoy comic strips on bathing beaches, 1923.

15.—D. T. Williams Valve Co. starts business in Cincinnati, 1904.

Fifty per cent of New York's visitors sunburn their tonsils looking at Woolworth Bldg., 1925.

16.—E. F. Arras elected president of Columbus, O., M. P.'s Assn., 1904. Is now International President of Kiwanis Clubs.

A movie shows a Wall street broker without champagne or chorus girls, 1977.

17.—Cincinnati Lead Pipe & Sheet Lead Works burned, 1892.

Paperweight found to be only thing which will keep gas bills down, 1923.

18.—E. C. Stover, Trenton, N. J., patents flushing tank, 1892.

Women hang everything on their ears except bathtubs, 1925.

19.—E. J. C. Lambert opens plumbing shop in Brooklyn, N. Y., 1894.

"Here Comes the Bride" voted world's greatest war song, 1955.

20.—Toronto stops running of street cars on Sunday, 1890.

All men are killed off in order to make women dress more sensibly, 2000.

21.—First aeroplane flight in U. S., 1903.

First aeroplane fright in U. S., 1903.

22.—First day of winter. P. J. Madden, Chicago, patents water closet, 1904.

Some people will continue their cold morning plunges; others will continue to lie about it, 1924.

23.—Geo. H. Bailey, Pittsburgh, patents seat hinge, 1894.

A barber is the only man we are compelled to take our hat off to, 1923.

24.—About nine million husbands decide to do their Xmas shopping, 1923.

About nine million wives get ready to receive a check as a gift, 1923.

25.—Christmas. Druggists lay in stock of indigestion tablets, 1923.

26.—L. Wolff Mfg. Co.'s Chicago foundry destroyed by fire, 1891.

Unshrinkable flannel invented, 1999.

27.—American Radiator Co. opens branch office in London, 1894.

Henry Ford corners the sheet market and thereby abolishes Ku Klux Klan, 1927.

28.—J. V. Reagan, president Philadelphia M. P. Assn., dies, 1904.

A w. k. reformer starts trip around the world and public wishes him success on first half of journey, 1923.

29.—Chinese republic proclaimed, 1911.

Oriental influence on Americans found in huge sales of Ma Jong sets, 1923.

30.—Jas. J. Wade, Chicago, patents basin fitting, 1903.

A millionaire lends money to his wife's relatives and dies poor, 1923.

31.—The waterwagon is pushed up an alley. Prohibition enforcement officers unable to locate a drop, 1923.

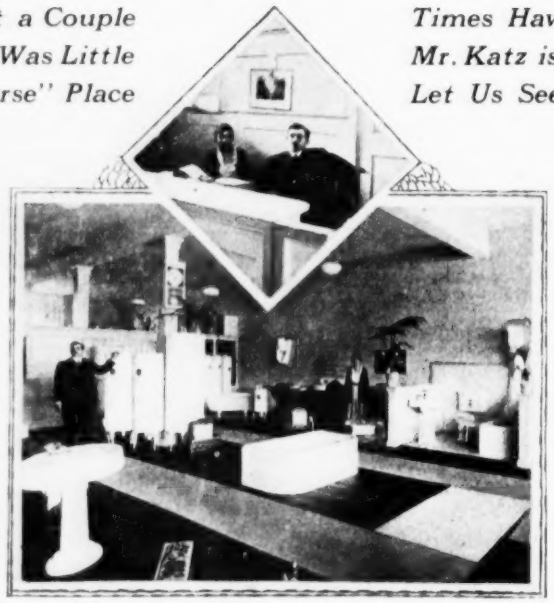
Happy New Year—A. W. B.

Built On Three Legs

By Adam Ale

Mr. Katz Admits That a Couple of Years Ago His Shop Was Little More Than a "One Horse" Place

Times Have Changed and Now Mr. Katz is On the Way to—Well, Let Us See What He Has Done



Mr. Katz and the ever-reliable Miss Olga Dingledein, private secretary, in Mr. Katz' new office and in his new display room

LOS ANGELES is noted for its climate, scenery, movies, and nearness to the world's biggest ocean. Some day it may be noted for many other things. Ah, yes! Some day, as you sit in a Los Angeles rubberneck wagon, listening to a leather-lunged guide, you may hear him say: ". . . an' tuh th' right, ladies and gents, is th' plumbin' an' heatin' establishment of W. N. Katz . . . fines' place of its kind wes' o' th' Rocky Mount'ns . . ." That's what he may say—some day. And then the sight-seeing bus will rumble on its way, and you'll probably forget all about it.

But folks out in the City of the Angels are beginning to know who W. N. Katz is. Just now he can say that his new store is the best in his vicinity. Of course, Los Angeles is a big burg, which, of course, may help to make the present establishment of this plumber not as big as it might be. Los Angeles is growing—so, too, is the business of W. N. Katz. And now, to get back to the first thought, it may not be such a stretch of years before W. N. Katz will have the finest place in the city. Here's hoping.

To build big, one must build solidly. And to build solidly, one must have a foundation that will withstand the wear and tear of time. Let's get down to bedrock.

The comfortable, business-stool upon which Mr. Katz sits, has three legs. They are Satisfaction, Service and Quality. Neither is complete without the other. But when all three are assembled—my, what a great business-building combination they make.

Mr. Katz counts the satisfaction of a customer among his greatest assets. He believes satisfaction to be the most powerful advertising force there is. And, in one way, he's right. Word-of-mouth advertising—that is to say, one person saying something good about your business to another person—cannot be bought. It is the result of satisfaction. If you can't wrap up a lot of satisfaction with every sale, you had just as well keep to the side-street and stall off the landlord. No man ever built a business without the all-important element of satisfaction as a part of the whole.

The second leg of the stool is service. This plumbing and heating man realizing how much the word has been abused, set out to make it work for him. The way to make service worth something is to apply it a la Webster. Any dictionary will give the correct formula upon which Mr. Katz based his service.

"A little more than two years ago," explained Mr. Katz, "my shop was nothing more than a one-horse place." Yet today this same man has a newer and bigger shop—a sixty-horse shop—and is doing big jobs and lots of them. He can deliver the goods on anything from a 69-apartment building to a plug for the bath tub. That's why he figures service as the next important thing in the line of good business.

When you go fishing for business be sure you use the right kind of bait. Big business as well as little business may be caught with the bait of Satisfaction, Quality and Service

Quality—the third leg of the stool—is as necessary as satisfaction and service. Quality does not end with the kind of goods Mr. Katz sells. It's quality work as well. You see, you can't get away from this trio of winners.

The present shop, or store—call it what you will—is a sort of a testimonial to what two years of hard work, brain work, and foresight will do. From a few men to twenty-five men on the job is a jump which explains the reason why W. N. Katz will keep on keeping on. If he can grow so much in two years, how much can he grow in the years to come?

Los Angeles is said to be the City of the Angels. If this be true, then perhaps Mr. Katz will tell us what good angel is giving him "the inside" on

his business. But then, perhaps we can figure "the inside" out for ourselves. In every city there are good angels. I think the one which helps this Los Angeles man most is the one which probably helps folks like you and me most. If we follow him closely our bank balance will probably resemble an addition of telephone numbers. The angel I speak of is named "Stick-to-it-iveness."

Air Conditioning*

By Dr. W. A. Evans in "The Chicago Tribune."

IF YOU ask any physiologist what are the qualities of good ventilation he will reply "air conditioning."

By "air conditioning" he means that when ventilation is artificial the air must have a temperature ranging from 65 to 68, a relative humidity around 50, an air movement that is just short of being called a draft, and a lack of evenness. By "lack of evenness" he means both the temperature must rise and fall somewhat and there must be air currents. If you ask him about it he will readily add "The air must be free from dust, smoke, odors, and bacteria."

If, then, you ask him about the harmfulness of carbonic acid or other poisons thrown off by the body his answer will be that they are not factors. He may add that the reason those people died in the black hole of Calcutta was because the air became too hot and not because it became saturated with carbonic acid.

If you press him on the subject of crowd poison and other chemicals he will tell you that the French and German scientists went into that subject thoroughly, beginning their researches more than fifty years ago, and no such poisonous substance was ever located.

These statements would all be true. They set forth our present knowledge and opinion, and are the basis of the best, though not the prevailing practice. But the old idea that man poisons his fellow man through the air he breathes will not down. This thought may be sticking because of the legend of St. George and the dragon, but there is at least a chance that we sense trouble because there is trouble, although there is no scientific way of proving it.

About ten years ago Amoss and Rosenau made some experiments on guinea pigs which seemed to show that we are harmed by substances in the air thrown off by the body, and there was a way to prove it. Nobody was able to confirm this experiment, and Leonard Hill appeared to disprove it by showing that there was sweat in the air which the guinea pigs breathed. In other words, that while there was some proof that air around guinea pigs was harmful to other guinea pigs, it was because of something thrown off by the skin and not of something excreted by the lungs.

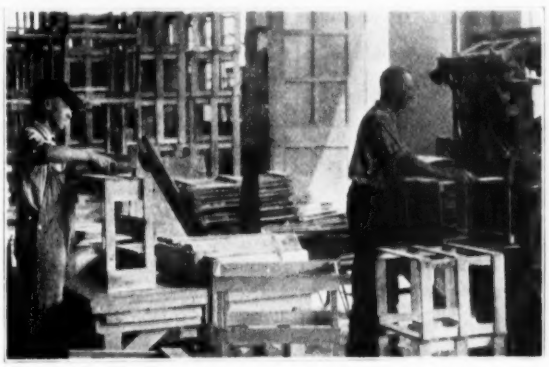
Sewall and Gullstein now offer some further proof that Rosenau and Amoss were right. They confined guinea pigs in cages where the air was exceedingly bad. It was full of carbonic acid and dust. After a while these guinea pigs became asthmatic. He took them out and kept them in good air. Whenever he put one of these sensitized guinea pigs in a pen where the air was bad it became asthmatic in a very short while.

It appears that exposure to very bad air conditions can sensitize a guinea pig to bad air just as people become sensitized to pollen and have hay fever, or to strawberries and have urticaria. Furthermore, a few months later this batch of guinea pigs commenced developing tuberculosis and thirty-seven of them died with what appeared to be that disease in the space of three months.

*Copyright, 1923, by Dr. W. A. Evans.

The Story of Sanitary Pottery in Pictures

This is a series of twenty-nine pictures showing how sanitary pottery is made. This is a twentieth century development of one of the oldest industries in the world.



No. 21

The Packing Department

The pictures, Nos. 15 to 22, in this series illustrate the manufacture of Cast Ware.

One of the most important departments of a factory where sanitary pottery is made is the packing department. Each piece of pottery must be well crated before it is sent out on its journey. In the department pictured above, the wooden strips are rapidly cut to the required length by machinery, and other machinery nails them together with a speed that is astonishing to one not familiar with this operation.

It is a long process, however, before a piece of pottery is ready for the crate. Seven to ten days are required for casting and drying the ware, three to four days for bisque firing, three to four days for dipping and drying, three to four days for firing of the glost, and three to four days for fitting and packing, making a total of about four weeks which are required to turn out the finished product.

In the previous issue, in telling of the various kinds of clays used, and of how they are procured, we told how the china clay is washed from the walls of the great open pit, and how the mixture of clay, water and sand is made to flow through long troughs to remove the sand and other impurities. From these troughs the mixture flows to large settling tanks where the clay gradually settles. Then the water is drawn off and the clay is taken to drying kilns where it is prepared for shipment.

China clays, it is claimed, have very little plasticity, but have a very good white color and it is for this reason that they are used in the clay body in the manufacture of sanitary pottery.

Picture No. 22 will be published next week.

Installation of drinking fountains for cows was urged by R. L. Olmstead, dairy expert of Pennsylvania State College, before a meeting of farmers in Dauphin county, Pa. He pointed out that 87 per cent of milk is made up of water and 56 per cent of the cow's body is water, therefore, plenty of water should always be available.

QUESTIONS & ANSWERS

This department is a clearing house for ideas and is open to every reader of "Domestic Engineering." Problems sent in are replied to at the earliest possible moment by "Domestic Engineering" and this department can be made more valuable if readers themselves will help the man who needs assistance. Read the questions and answers. If you have had similar problems, or know from experience how the faults can be remedied, do not hesitate to send in your comment or criticism. It will be some satisfaction to you to know that you have helped a fellow craftsman and a pleasure for us to pass on the data. "Every man owes some of his time to the upbuilding of the profession to which he belongs."

HEATING A COIL IN HALL FROM RANGE BOILER

Editor, "Domestic Engineering":—Having read some most interesting suggestions in "Domestic Engineering," I ask you to answer this problem for me. I have a 30-gallon boiler in the cellar and want to run a coil from it to help heat the hall. The coil is made up of ¾-inch

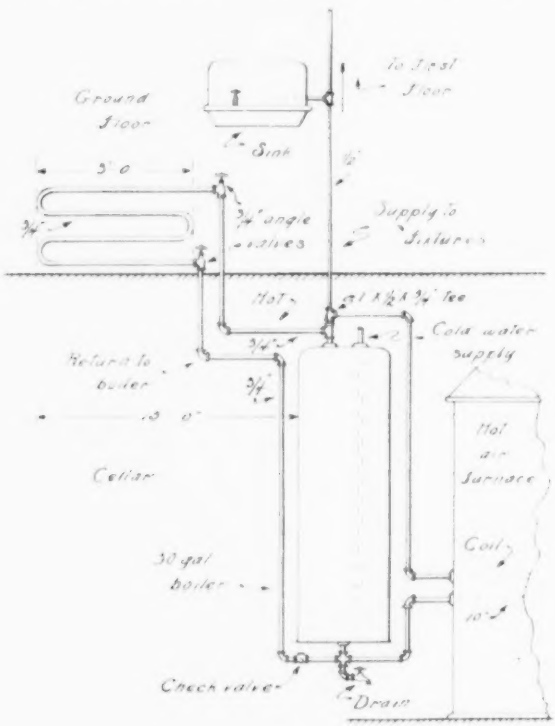


Fig. 1

pipe, 3 ft. long, with return bends as per sketch, Fig. 1. Will this arrangement work right?

Ontario, Canada. F. S.

The method of connecting up the coil shown in Fig. 1 is quite correct. All you require in addition to what is shown is an air vent attached to the highest point of the coil. Pitch the hot supply up to the coil, and the return down toward the boiler. We do not think that the check valve shown is necessary. We believe the coil will heat better without it. We approve of the 1 x 1½ x ¾ T over boiler. It helps to prevent the water from rushing up through the coils and mixing cold water with the hot when a hot water faucet is opened.

O. K. RANGE BOILER INSTALLATION DOES NOT SATISFY CUSTOMER

Editor, "Domestic Engineering":—Fig. 1 is a sketch of a range boiler on the second floor. There is a store on the first floor, which our customer claims does not heat. We would like to find out what you think of this. Please let us hear from you through the columns of "Domestic Engineering."

Indiana. S. K.

Your sketch illustrates an O. K. arrangement, which, if the piping is all clear and large enough, and the water-back is large enough and installed in the usual manner, should give satisfactory results.

Your sketch illustrates good practice in this line of

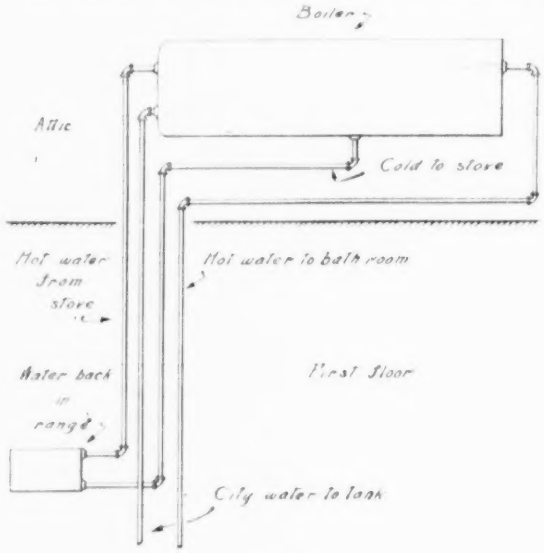


Fig. 1

work. Possibly the trouble is that the customer requires more hot water than an installation of this character is capable of furnishing. Possibly they are too saving in coal and do not burn enough to heat the water properly. These things you may look into your

self by an occasional visit to the job when you are not expected, and just before the big demand for hot water comes on.

CONNECTING TWO BOILERS OF DIFFERENT SIZE

Editor, "Domestic Engineering":—Here is a sketch of two boilers connected together, the larger one rated at 1200 ft., being added to until it was overloaded. Later the 700 ft. one was put in to help out. The water-lines are level. The equalizer, however, had to be run around to the opposite side, on account of the angle of the big boiler, also because of the number of other pipes between the two. When both are fired they work fine, and have no trouble taking care of 1200 ft. of radiation. But when either one is fired, that is, when fresh coal is thrown in, the water-line in that boiler drops out of sight for a time, but gradually returns. Could you tell me why it does this, and if the equalizer between the boilers is big enough, and how the lowering of water-line at times can be explained. These boilers ordinarily carry from two to five lb. pressure, and both seem to be equal. That is why I cannot understand the variation in the water-lines with the pressures equal. I also want to say that I enjoy your questions and answers department very much.

Montana. M. H. S.

An examination of the sketch submitted reveals the fact that the boilers are not connected in such a manner that they will work properly in unison.

It is somewhat difficult to connect two boilers of unequal size and character so that a steady water-line in each boiler will be maintained under all conditions of firing and use. The first requirement is that the boilers shall be set in such a manner that the normal water-line in each is at the same height. This requirement, according to the information given in your letter, you have fulfilled. The second requirement is that they shall be connected in such a manner that the water-line will not be disturbed by unequal firing. This requirement has not been met, if we rightly understand your sketch.

The equalizing pipe shown is not an equalizer in the

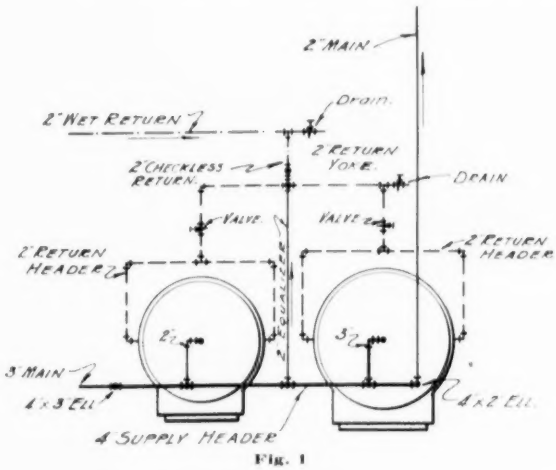


Fig. 1

true meaning of the term. There should be a steam header constructed across the boilers and each boiler should be connected to this header. A return header should connect the return openings of the boilers. The equalizing pipe should connect the steam header with the return header. The steam mains should be connected from the steam header and the return or returns (if there be more than one) should connect into the return header.

We do not like the method of using a check valve in the return. We prefer to use the checkless method of connecting the return. We submit a sketch (Fig. 1)

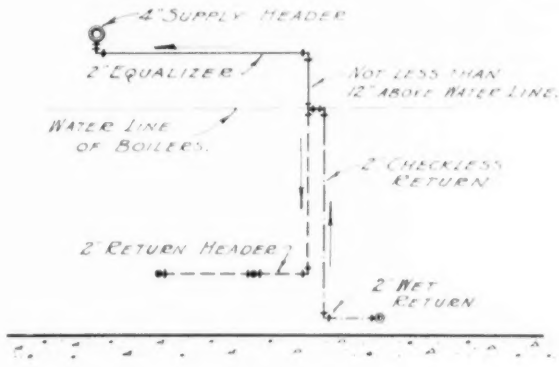


Fig. 2

showing the suggested method of connecting the boilers. We have assumed that there is a return opening on either side of each boiler. In the event of there being but one return opening, a single connection can be made instead of two as shown. By placing valves on the steam and return connections to each boiler, either one of them can be used independently of the other. The advantage of making this provision is that in mild weather some of the radiation can be shut off and the large boiler only fired. When the severe weather comes and all of the radiators are required the smaller boiler can then be used.

The elevation sketch (Fig. 2) shows the checkless method of connecting the return. As will be noted, this connection is made into the equalizing pipe at the water-line. If the boilers are connected in accordance with the method suggested and illustrated, there should be no trouble with variation of the water-line.

CAST IRON RADIATION SUPPLIED WITH HEAT BY ENGINE

Editor, "Domestic Engineering":—We would like to ask you to give us the number of sq. ft. of direct cast iron steam radiation per engine horse power which could be heated with exhaust steam with a maximum of three pounds at the engine. The radiation is to be installed in the same building as the engine. We understand conditions will govern, so we wish only an average estimate of radiation which can be heated. Also kindly advise us if a tubular boiler built for power purposes at 125 lb. working pressure, or more, can be used as economically with the use of a pressure regulating valve as a tubular boiler built for low pressure steam at 15 lb. steam pressure.

Nebraska. F. M. Z.

There are so many angles to your question regarding the amount of cast iron radiation that can be supplied per indicated h. p. of engine that we can hardly go into sufficient detail to give you a really satisfactory answer.

Originally the terms "boiler horse power" and "engine horse power" were synonymous; they both meant the

same—lifting 33,000 lb. per minute—as determined by Watt. It was estimated that 30 lb. of steam was required to develop a boiler and engine h. p. Now, as improvements have been made to engines, the pounds of steam required for an engine h. p. have been reduced to 25, 20, 15 and, in some highly perfected engines, to 12. Hence an engine h. p. is quite different from a boiler h. p. If the engine develops a h. p. on 20 lb. of steam, 85 per cent of its heat value is available for use in the heating apparatus. 85 per cent of 20 is 17, the pounds of steam, or equivalent, available. The total heat in a pound of steam at from three to five pounds pressure is about 1150 B.t.u. 1150 × 17 = 19,550 B.t.u. available per engine h. p. If a sq. ft. of radiation gives off 240 B.t.u., 19,550 ÷ 240 = 81 plus, the sq. ft. served per engine h. p. As a radiator at atmospheric pressure gives off about 200 B.t.u., 19,550 ÷ 200 = practically 100 sq. ft. per h. p. of the engine.

Conditions of installation and method of firing will govern the rate of fuel consumption under the boiler and we doubt if there is much difference between a high pressure or a low pressure tubular boiler as regards fuel consumption, when the former carries 125 lb. pressure (reduced for use in the heating apparatus) and the latter is operated at 15 lb. pressure. Boilers of the tubular type are considered most economical when used with a high rate of fuel consumption per sq. ft. of grate. Cast iron heating boilers are operated with a lower rate of fuel consumption per sq. ft. of grate.

WHY WATER BOILS IN THE EXPANSION TANK

Editor, "Domestic Engineering":—Will you kindly look over the accompanying sketch and tell us what is wrong with it? It was necessary after leaving the expansion tank to keep the pipes high up in the room, which is only one story, and to put short nipple and ell in the bottom of the expansion tank for the flow. The return is one size larger from the end of the radiator at X. Before the radiators get hot all the way down the water boils in the expansion tank. Can you show us where we are wrong? You will note we have taken the return from one radiator into the bottom of the other one, feeding the same at the top. We will thank you for your opinion on this problem.

Pennsylvania. M. & R.

The detail shown on the sketch enclosed with your letter would seem to indicate that, due to your method of piping the work, there is not sufficient difference in the specific gravity of flow and return to establish a circulation.

Fig. 1 is a reproduction of your sketch drawn to represent the radiation as though it was installed on the one side of the garage and on this sketch we have shown by dotted lines a suggested method of installing the return piping. We should prefer to make an independent return connection from each radiator as shown. Note the heights marked A and B. If the distance A can be increased by running the return line nearer the floor of the garage it will help the circulation. Water boils in the tank because there is not sufficient energy to move the volume of water in the system as you have the radiators connected.

SANITARY PLUMBING LAYOUT FOR LARGE TOILET ROOMS

Editor, "Domestic Engineering":—I am a reader of "Domestic Engineering," and am very much interested in it, so I am taking the liberty of asking you to sketch out the piping for the drawing of fixtures, (see Fig. 1) so that it will be properly vented and installed. You will notice that I have only one vent shaft to install my vent through the roof, and you will also see that the sewer line of soil pipe is in place. I am handicapped at present, as to just how the piping should be installed. When installed this pipe will be all under the cement floor.

Texas. E. R.

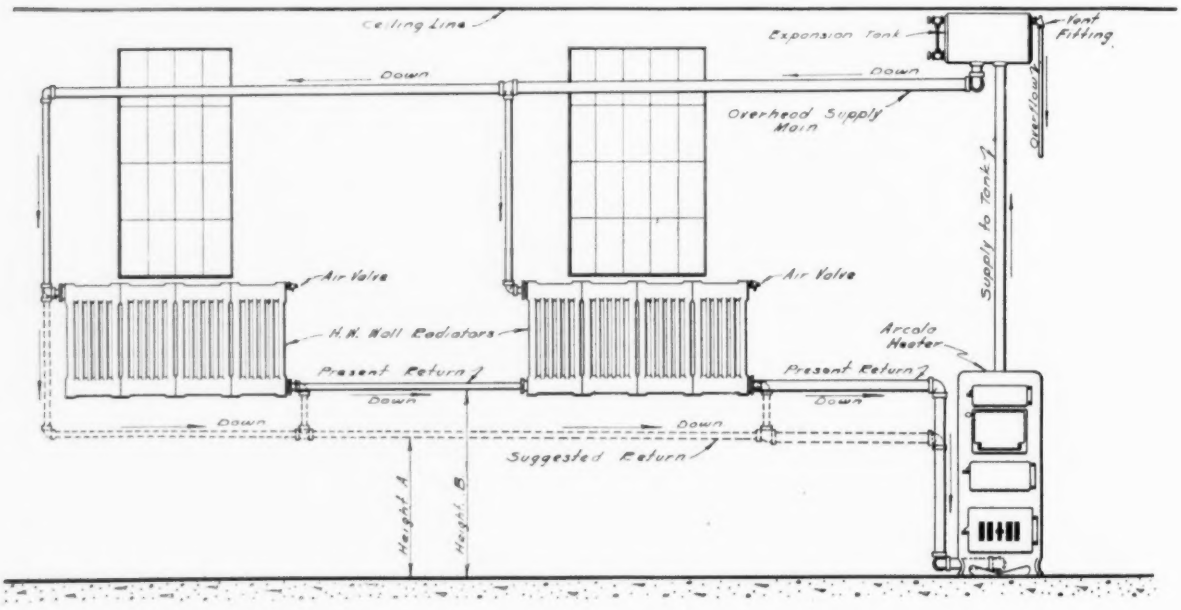


Fig. 1

There are different methods of running the piping for these fixtures in order to insure a sanitary installation, and they would no doubt depend somewhat on the requirements of your plumbing code. If separate back-venting is called for at every fixture, then of course,

you would have to design accordingly. If, however, wet venting, or continuous loop venting is allowed, then you may design the installation something like Fig. 2.

In this layout the present house drain is extended

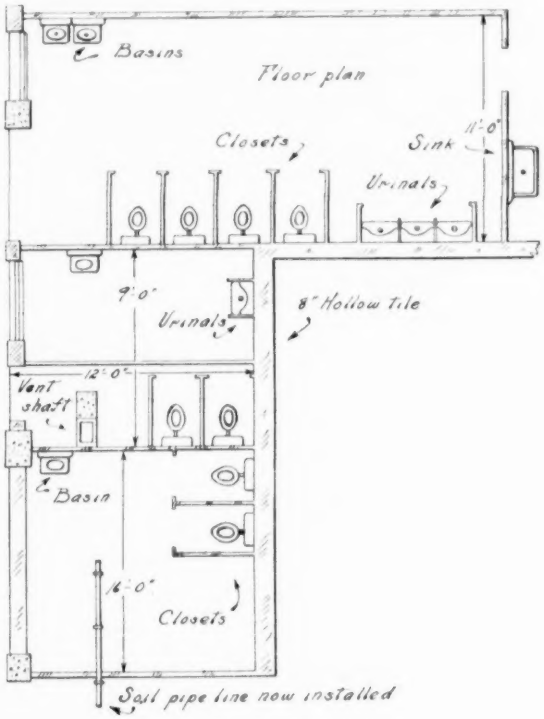


Fig. 1

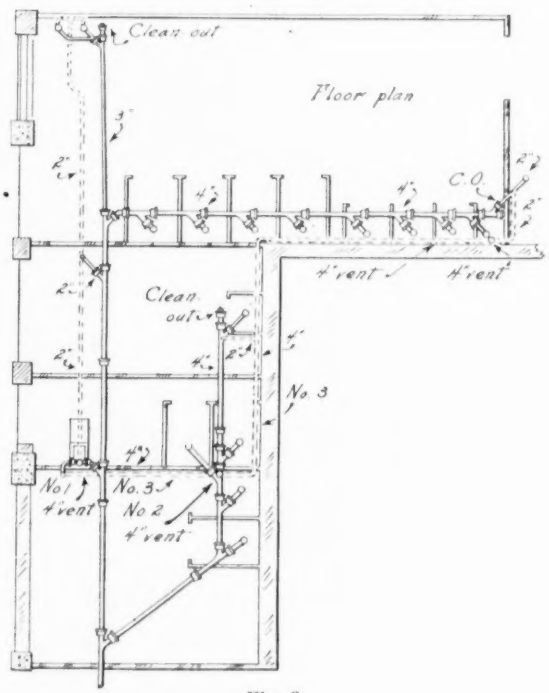


Fig. 2

straight, branches being taken off to the water closets and urinals. The solid line piping is all under the floor. The dotted line piping is the vent system and runs at or over the ceiling. A 4 inch vent stack runs up inside of the shaft. All vents are drawn together and lead into this stack at ceiling. The base of vent stack connects into the drain with 45 degree fittings. The lavatory No. 1 delivers into base of vent stack to keep it washed out clean and free from rust. At point No. 2 a 4 inch vent runs up to ceiling and connects into vent No. 3.

This installation is laid out in a simplified manner. But the principles of sound modern sanitation are incorporated throughout. The system is all thoroughly vented, the slop sink and lavatories being separately back-vented and the closets and urinals being loop vented.

Clean-outs are placed at the end of every horizontal line for access with cleaning rods. We trust this layout will help you.

A SODA FOUNTAIN DRAIN CONNECTION

Editor, "Domestic Engineering":—The accompanying sketch, Fig. 1, shows how the soil pipe has to be run for a bathroom on the second floor over a drug store. The line of pipe from the bathroom has to run 15 ft. under the joist, then 15 ft. drop down, then across the

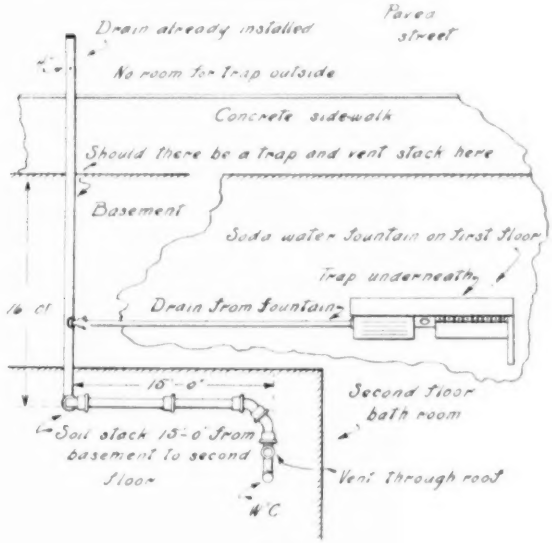


Fig. 1

cellar 16 ft. to the sewer pipe, then out under the street. I am showing where I expect to set the vent to go from the bathroom up through the roof. Should there be a trap and vent pipe in the corner of the cellar, as we can not get the trap outside, besides the vent in bathroom. The drain from the soda fountain is tapped into sewer in cellar, and has a trap at fountain.

Illinois. T. F. O.

You may place a 4-inch main drain trap and fresh air inlet where shown at corner of cellar.

The soil stack vent should be run full size up through roof at bathroom.

The soda fountain trap should be back-vented with 1½-inch pipe either separately up through the roof or connected into the 4-inch soil pipe vent at bathroom above the level of the lavatory slab.

If the job is finished in this manner, the result should be entirely satisfactory.

Legal Questionnaire

*How will the Court Construe Contradictory Clauses in a Heating Contract, Calling for a System to Heat Rooms to 70 Degrees in Zero Weather? This Question is Answered in a Most Thorough Manner**

By "The Judge"

COURTS WILL CONSTRUE CONTRADICTORY CLAUSES IN CONTRACT TO CARRY OUT INTENTION OF PARTIES IF POSSIBLE

Editor, "Domestic Engineering":—In what way are we held responsible under the following paragraph in a contract, and why?

"The entire installation shall be strictly in accordance with this specification. No deviations from drawings or specifications will be allowed unless upon written consent of the Architect or his authorized representative. The amount and size of each radiator must be determined, however, by the heating contractor. Upon completion of the work, heating contractor shall guarantee the system to be capable of heating the rooms to a temperature of 70 degrees in zero weather with proper firing and attention."

N. Y. S. H. P.

Answer:—The paragraph set out in your question is, of course, contradictory in its terms. In the absence of knowledge of the other terms of the contract and the facts surrounding your case, my answer must of necessity be of a very general nature. If your question is prompted by a desire to know whether you should sign a contract containing such a provision, my answer would be that you should not sign it, for it would not be possible to know with certainty what your rights under it would be. My answer would also depend upon whether the boiler provided for in the plans is of sufficient capacity, if properly fired and attended to, to heat the building if proper radiation is installed. If the boiler, as it appears in the plans is not sufficient, no matter how much radiation is provided, then it would be up to you to refuse to sign the contract, for you would probably be held to the contract to heat the building to 70 degrees in zero weather. The mere fact that it might be impossible to heat the building as per the contract, because of inadequacy of the boiler, no matter how much radiation is installed, would not relieve you from your obligation to heat the building properly. On the other hand, if the boiler and steam system is sufficient, with proper radiation, to heat the building, you undoubtedly would be held responsible if the building is not properly heated by the radiation you install.

The difficulty with the paragraph which you have set out is, that in one part of it you are bound by the specifications and in another part you are required to make your own specifications. It is a general rule in the construction of contracts that where two clauses are inconsistent and conflicting, the two clauses will be construed so as to give effect to the intention of the parties to it as collected from the whole instrument. It would seem apparent from your paragraph that the architect intended that you should be bound not to deviate from his specifications except in the matter of radiation, and that you should be held responsible for the proper heating of the building and also give a guaranty to that effect.

Apparently conflicting provisions in a contract are reconciled if possible by any reasonable interpretation, it being necessary for this purpose to consider the entire instrument and surrounding circumstances. If one clause is at variance with another, the one contributing most essentially to the contract will be entitled to more consideration than that which contributes less, or, as has been said, the clause which essentially requires something to be done to effect the general purpose of the contract itself is entitled to greater consideration than the other. Where two clauses are so inconsistent and repugnant that they cannot stand together, the first will be retained and the second rejected, unless the inconsistency is so great that the agreement is entirely void for uncertainty.

I do not believe that your contract is so inconsistent as to be ruled entirely void under this last rule, although, where the language admits of but one meaning and the different clauses are plainly contradictory, they mutually destroy each other and render the instrument void. In any event, a subsequent clause may be rejected as repugnant only where it cannot be given effect by any fair or reasonable interpretation of the entire instrument, the rejection of a repugnant clause being an expedient which the court will have recourse to very reluctantly. I believe that your paragraph would be construed under the rule, which the courts use, of restricting the meaning of general words by more particular and specific terms and descriptions of the subject matter to which they apply. Thus, general expressions will be restricted by particular descriptions and additions which follow them. To apply this rule to your case, it would seem that the Court would say that in general you have no right to change the specifications made by the architect, but that in the case of radiation you must provide such specifications yourself as will properly heat the building.

In its endeavor to ascertain the intention of the parties the Court will try to determine the main object of the contract or the purpose which the parties sought to accomplish, and particular parts of the contract must be so construed as to harmonize with such purpose, if possible.

It may be possible that your contract may fall under the following rule, which holds that where part of a contract is printed and part is in writing, the writing being made in blank spaces left on a printed form, the written words will control. It may be that the contract in your case was made on the architect's printed form, or type-

*Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the Very Nature of the Service, which is rendered without a personal interview.—Editor.

written form, and that the second part of the clause, requiring you to decide about the radiation, was written in afterwards. In such a case the written part would control.

It is also a rule of construction that the courts will construe a contract so that it may be carried out, and will not construe it as meaningless and void unless absolutely required to do so.

While I am unable to give you a definite statement as to your liability under the paragraph you set out, because I do not know all the facts and all the other terms of the contract, I feel that the courts would hold you to a proper heating of the building; that is, that the radiation would heat the building to 70 degrees in zero weather, provided, of course, that the boiler is properly fired and attended to. In other words, I believe that the courts would say that you had undertaken, by installation of proper radiation, to heat the building according to the contract with the boiler plant which was provided for in the specifications. If that is not possible, or feasible, it will not alter your liability, for the courts would probably say that you had undertaken to do so. The mere fact that it might be impossible to heat the building properly with the boiler provided would not make any difference, and you would be held liable for failure to accomplish what you should have known was impossible.

"Th' Grade O' Brass"

Argues Henry Homespun

"Shouldn't depend on your grade o' gas"

WELL, as us older fellers grow older, th' truth of th' copybook maxims becomes truthier an' truthier. Sayin's like "Honesty is th' best policy," and "It's better to give than to receive" ('cept in a prize fight) —they hit home as new problems come up in th' old business.

* * * * *

Take, f'r instance, I was readin' about th' gradin' o' brass goods. Now I ain't one to say what should be done, 'cause when I was doin' business such ideas was never thought of. Neither was flyin' machines—but we got 'em today.

* * * * *

As I look back one thing strikes me right where my specs pinch. An' that is this: All th' things which was hollered about yesterday as bein' new and rash, have become th' old reliables of today. The public can't do without 'em. Look at th' wireless; th' one price system of John Wanamaker; th' Pure Food Act; the elimination of fake advertisin'.

* * * * *

At one time folks doubted th' wisdom of freein' th' slaves. They is allus someone who doubts—if they wasn't they would be no progress. We got to have doubters, jest like we got to have doers.

* * * * *

Th' public is King. An' th' King is goin' to live forever. An' it seems to me that if th' King knows what grade of brass goods he's payin' for he ain't so liable to cut your business head off. In other words, 18 karat gold is jest that — it ain't 20 karat, and it ain't platinum. Th' public knows what it's buyin'—and it's payin' jest for what it buys.

* * * * *

Honesty is not only th' best policy—it's th' only policy. A plumbin' and heatin' dealer has got to talk longer to sell ungraded brass than he would if th' brass he was sellin' was marked as to quality. An' gradin' your line of gas to fit in with th' grade of brass you're sellin' is overhead which ain't never to be paid for.

* * * * *

To mark brass ain't any more difficult than to mark gold. And markin' brass'll be givin' th' public a squarer deal by way of th' dealer. And th' public don't move on when it's gettin' its bread properly buttered. Ain't it th' truth?

* * * * *

Progress comes along by leaps and bounds, only we don't realize it. Maybe th' gradin' of brass is a bit of progress which we ain't yet accepted. But you can depend on this: If such an idea is th' right thing—it'll be done in spite of hell an' high water. That's th' way of progress. Progress, you know, is like a steam-roller. It don't pause for kickers. Th' guy who is agin' it ain't goin' to make much of a dent.

* * * * *

Th' plumbin' and heatin' industries is gradually gettin' standardized. Their ways of doin' and makin' and sellin' are becomin' simplified. As we make things easier, we go ahead. Red tape is only good f'r wrappin' Christmas packages. Makin' the sellin' of brass goods an easier thing, is goin' to cut down complaints, returned goods, loss of business, cussin' and other items which ain't doin' nobody no good. Maybe th' gradin' of brass is the next move. Maybe it ain't. Give it a thought—discuss it with fellers who have th' same business worries as you. Get their slants.

Tables, Rules and Calculations for the Plumber

Found Useful for Reference in Solving Problems Encountered in Plumbing and Drainage Installations

Part XIII of "Model City Plumbing Code"

By Frank R. King

State Plumbing and Domestic Sanitary Engineer, Wisconsin State Board of Health

(Continued from page 372 in the November 24th issue)

Combination Main House Drains—Computing and Proportioning Sizes of

Main house drains serving as combination drains (sanitary and rain water) may be determined for all practical purposes by computing the total horizontal surface area covered by the building or buildings and the paved surfaces to be drained. Drains so proportioned have been found in practice to be amply large and to give satisfactory results (Table II-B), providing that no part of a vitrified clay house drain carrying the discharges from water closets is less than a 6-inch pipe.

Table II-B

Showing Pipe Sizes for Combination Main House Drains and Horizontal Branches. Based on Roof or Covered Areas in Sq. Ft.

Diameter of Pipe	Roof Area in Sq. Ft. Grade ⅛ inch per foot	Grade ¼ inch per foot	Grade ½ inch per foot
4 in.	1,500	1,800	2,500
5 in.	1,800	3,000	4,500
6 in.	3,000	5,000	7,500
8 in.	8,000	11,000	16,000
10 in.	15,000	21,000	30,000
12 in.	25,000	35,000	50,000
15 in.	45,000	65,000	96,000
18 in.	76,000	108,000	150,000

Barrett's Formula for Computing Vertical Rain Water Leaders

The following formula as given in Barrett's specifications for "Holt Roof Leader Connections" has been found in practice to give satisfactory results:

For vertical leaders serving roofs covered with gravel or slag, with an incline not exceeding one-quarter of an inch per foot, allow 300 sq. ft. of roof surface to each square inch, or leader opening; for roofs of greater incline or saw-tooth roof construction, 250 sq. ft. roof surface to each square inch of leader opening; for metal, tile, brick, slate, or similar roofs of any incline, 200 sq. ft. of roof surface to each square inch of leader opening.

Note: This formula is based upon the leader opening. The leader pipe is therefore in each case one size larger. (For cross sectional areas in square inch of various sizes of pipes see Table V.)

Sanitary House Sewers and Drains

The size of a main house sewer or drain or branches thereof serving as a sanitary sewer or drain constructed to conform with the provisions of section 4 (b) and Chart A will prove adequate for all ordinary installations. No such sewer or drain shall be of a lesser diameter than the largest line of pipe connected thereto.

Barrett's Table Showing Square Feet of Roofing—Surface Which Can Be Drained by Given Size of Leader-Outlet

	Size of Leader 2½ inch	3 inch	4 inch	5 inch	6 inch	8 inch
Roofs covered with gravel, slag, or similar material with incline ¼ inch to 1 ft.	1800	1800 to 2200	2200 to 3600	3600 to 5600	5600 to 8000	8000 to 14000
Same with incline ½ inch to 1 ft. or more and saw-tooth roofs	1200	1200 to 1700	1700 to 3100	3100 to 4900	4900 to 7000	7000 to 12000
Metal, tile, brick, slate, or similar roofs of any incline	1000	1000 to 1400	1400 to 2500	2500 to 3900	3900 to 5600	5600 to 10000

In order to provide ventilation and prevent back pressure, sanitary sewers must be so designed as to flow not more than half full. A minimum velocity of 180 ft. per minute is necessary to assure proper scouring and thus reduce stoppages to a minimum. Based upon Kutter's formula for pipes flowing half full, the velocity and carrying capacity of sewers laid at grades of 1/16 inch to ½ inch per foot may be determined from Table II-C.

Table II-C

Giving Velocity in Feet Per Minute and Discharge in Gallons Per Minute of Sewer Pipe Flowing Half Full Laid at Different Grades:

	Size of Pipe Inches 4 in.	6 in.	8 in.	10 in.	14 in.
		Grade ½ inch per foot			
Velocity	222	291	389	467	532
Discharge	70	220	492	914	1460
		Grade ¼ inch per foot			
Velocity	157	219	275	327	376
Discharge	50	156	347	646	1070
		Grade ⅛ inch per foot			
Velocity	111	154	199	231	266
Discharge	35	109	245	456	750
		Grade 1/16 inch per foot			
Velocity	79	109	136	163	187
Discharge	26	80	178	332	549

Note: Values below dotted line should not be used because of insufficient velocity.

Water Supply

In estimating hot water boiler capacities in plumbing installations a reasonably safe rule is to allow a 40-gallon boiler for a residence having one bathroom. The size, however, can be computed only by first ascertaining the quantity of hot water that may be drawn off at a given

time. In addition to the capacity of the boiler, the heating agents employed in warming the water must be taken into consideration. Hot water consumption is computed generally on the basis of 10 gallons per capita per day.

Nothing but an approximate idea of the consumption of cold water can be given. It is generally estimated, however, at 20 gallons per capita per day.

The following sizes of water supply for fixtures, when pressure is not less than 20 pounds, are generally considered good practice. There are, however, other conditions that must be taken into consideration.

Flush tanks should have a flushing capacity of not less than 3 gallons for water-closets and 1 gallon for urinals.

House service pipes must be connected to the street mains by means of a corporation cock, and a stop cock or valve placed under the sidewalks at the curb, in compliance with the rules and under the supervision of the Department of Water Supply.

A separate stop valve must be placed upon the service pipe inside the front wall.

The diameters of street service pipes must not be less than three-quarters inch for dwellings and tenements occupied by six families or less; one inch for tenements or apartment houses occupied by more than six families, and one and one-half inch for hotels, factories and other miscellaneous buildings provided that in no case can the diameter of the service pipes be less than the diameter of the tap installed under the supervision of the Department of Water Supply.

All rising lines should have a stop cock or valve at the foot of each line and in all buildings, except dwelling, a separate stop cock or valve should be placed on the branches from bathrooms, kitchens, etc., located so as to be accessible at all times. The diameters of all rising lines should be not less than three-quarters of an inch. Services from main in street or otherwise, to inside of building and above basement or ground floor should be of lead or cast iron.

Diameters of branches to any fixtures must not be less than one-half inch, except when used to supply water-closets, tanks, or lavatories. When the material used is lead or brass pipe, the minimum diameter may be three-eighths inch. Branches for flush valves for water-closets must not be less than one and one-quarter inch in diameter and for urinals not less than three-quarters inch in diameter. For relative discharging capacities of pipes see Table 7.

Where a hot water supply system is installed, the distance between the hot and cold water risers should be not less than six inches. Where it is impossible to place them six inches or more apart, the hot water riser should be covered with an approved insulating material and a method of circulation that will insure a prompt delivery of hot water at the faucet.

All Risers and Branches Should Be Properly Fastened

When the water pressure is not sufficient to supply all fixtures freely and continuously, an elevated or air pressure tank should be provided of sufficient size to afford an ample supply of water to all fixtures at all times. Such tanks must be supplied from the pressure or by power pumps as may be necessary; when from the pressure, ball-cocks must be provided.

Such tanks must be made of suitable material, properly located and so installed as to prevent water contamination by foul odors from any source.

All such tanks should be properly supported on iron beams or concrete piers. Wood may be used if of substantial construction.

The overflow pipe from elevated tanks must discharge into an open fixture or drain, and in no case shall it be connected directly with the plumbing system. Overflow of this type discharging large amounts of water or which has a constant flow may not under certain conditions discharge directly or indirectly into a private sewage treatment system. (See Sewage Disposal.)

Water Requirements in Rural Homes

Purposes and Conditions	Consumption per person for 24 hours Gallons
Domestic purposes, 1 pump at kitchen sink	8
Domestic purposes, 1 faucet at kitchen sink	15
Domestic purposes, running hot and cold water in kitchen, bathroom, and laundry	25
Sprinkling and cooling purposes, outdoor washing waste, leakage, etc.	15
Average daily consumption, modern house	40
Maximum daily consumption, modern home	100
Average daytime consumption (7 a. m. to 7 p. m.)	38

Water Consumption by Farm Animals

As to the requirements of stock, animals prefer a living spring or a stream of pure cool water, and will go a long distance to obtain it. If supplied from artificial sources, fair allowances are 12 gallons per day for each horse, mule, or cow, and 2 gallons per day for each sheep or hog. Heavily worked horses and mules and milch cows may consume 20 to 25 gallons per day in hot weather, and with all farm animals conditions of weather, food and living may double or halve the ordinary requirement.*

Table III

Showing Gallons of Water in Various Sizes of Pipes or Tanks One Foot in Height

⅜ inch to 180 inch

Diameter of pipe in inches	Volume in gallons per foot	Diameter of pipe in inches	Volume in gallons per foot
⅜	0.005	27	29.7
½	0.010	28	32.
¾	0.023	29	34.3
1	0.047	30	36.8
1¼	0.064	31	39.2
1½	0.092	32	41.8
2	0.163	33	44.5
2½	0.255	34	47.2
3	0.367	35	50.
3½	0.500	36	52.8
4	0.652	37	55.9
4½	0.826	38	59.0
5	1.02	39	62.1
5½	1.23	40	65.3
6	1.47	41	68.6
7	2.00	42	72.1
8	2.61	43	75.5
9	3.30	44	79.1
10	4.08	45	82.7
11	4.93	46	86.5
12	5.87	47	90.2
13	6.89	48	94.0
14	8.00	54	119.
15	9.17	60	147.
16	10.44	66	178.
17	11.80	72	211.5
18	13.20	78	284.4
19	14.70	84	288.1
20	16.34	90	330.8
21	18.00	96	376.3
22	19.75	108	477.3
23	21.57	120	589.0
24	23.50	132	712.7
25	25.50	144	848.2
26	27.60	180	1325.3

Note: For weight, multiply volume by 8.33 (lb. per gal.)

Effect of Variations of Temperatures on Water

Water freezes at 32 deg. Fahr.

Water has a maximum density at 39.1 deg. Fahr.

Water boils at 212 deg. Fahr.

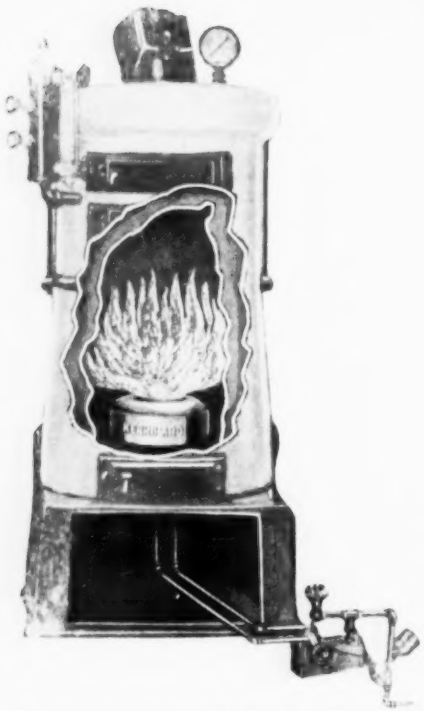
Water expands in freezing to about one and one-twelfth

(Continued on Page 507)

* Farmers' Bulletin 941, United States Department of Agriculture, October, 1918.

A Wonderfu Margi

Prove this proposition at r the biggest demand in th



The construction of the Kerrihard Oil Burner is PATENTED, and so there can be nothing else like it on the market. The UPWARD air-draft insures heat-comfort, heat-convenience, and heat-economy.

Mere talk doesn't go very far with the wise business man

Therefore, we're offering you not talk, but PROOF and we want you yourself to do all the proving.

We want you to PROVE our proposition *without one cent of risk to yourself.*

Here's your chance to get hold of the biggest money maker of your career. And our *special offer*, mentioned later in this announcement, will amaze you.

At last the Guaranteed Oil Burner

We've got the mechanically perfect oil burner, the New Patented Kerrihard — simple, entirely safe, absolutely efficient and economical — tested, tested, tested under all possible conditions. We KNOW the Kerrihard is right. And so we *guarantee* it *unconditionally*. It heats the home to the complete satisfaction of the user, or it goes back to the factory, and *every cent he paid for it is refunded to him without question.* And you can make a *complete installation* in the average home, in any kind of heating plant, in *less than two hours*.

Your opportunity NOW!

Coal is going. Coal *must* go! People already know about the advantages of oil for heating. They have simply been waiting for the really dependable moderately-priced oil burner.

And now comes the Kerrihard Oil Burner, priced so low that *every home can afford it;* and sold with an *unconditional guarantee of complete satisfaction to the user.*

We want you to be absolutely sure of the Kerrihard

NEW
of PROFIT

r expense, and cash in on
history of your business

efore you offer it to a single customer, or before you bligate yourself to pay out a single penny. Try it *at our pense*. Put it into your own home or the home of a end for a 10-day **FREE** trial. If it does not operate rfectly, send it back *at our expense*. But if you be- ve that at last you have found the mechanically simple d perfect oil burner, keep it and rake in a margin of ofit beyond anything you've ever heard of.

Be ready to take the money

The demand for a new fuel to take the place of coal is eady a reality. By advertising nationally, and by sales ips right in your own home town, we're going to get the lks in your community all steamed up over the New tented Kerrihard, the *guaranteed* oil burner. They'll asking you for the Kerrihard pretty soon. Be ready take their money. Have the Kerrihard to give them.

Remember, the Kerrihard makes a friend of every user. e women are going to tell their neighbors about the rrihard. Be the Kerrihard dealer in your locality to sh in on the absolutely certain demand.

For a Limited Time Only
An Unheard of Special Offer

The Kerrihard proposition will always be your prize oney-maker. But to introduce the Kerrihard Oil Burner e have planned a big surprise. We are going to put money actual money, and a big chunk of it — into the pockets a *limited number* of plumbing and heating men. ere isn't enough space here to give you all the details.

If you want to see how you can get this present, write immediately. And remember, only *a limited number* of dealers will receive this present: we simply couldn't afford to keep it up indefinitely.

Mail coupon for Special Offer TODAY!

Don't let this opportunity slip by. Don't put off sending for further information. If you do, other matters may prevent you from remembering. Don't wait until we are forced to withdraw our special offer. Make sure to be one of the *limited number* who will receive the amazing big money present. Fill out and mail coupon or send postcard TODAY!

AINESWORTH & ANTONE
Sole Selling Agents, The Kerrihard Co., Red Oak, Iowa
101 West 42nd Street, New York City

Mail this coupon TODAY

AINESWORTH & ANTONE,
101 West 42nd St., New York City.

Gentlemen:

Please send me further information about the *new patented guaranteed* Kerrihard Oil Burner and tell me how I can get the big money present that you are offering to a limited number of heating men. It is understood that this does not obligate me in any way.

Name .....

Address ..... Street ..... City ..... State

AMONG THE WHOLESALERS AND MANVFACTVRERS

CENTRAL SUPPLY ASSOCIATION TO MEET IN CHICAGO IN FEBRUARY

The ninety-second regular meeting of the Central Supply Association will be held at the Drake Hotel, Chicago, February 20 and 21, 1924. At this meeting the new range boiler standardization will be definitely submitted to the association for final endorsement. A questionnaire was recently sent out on the subject and the proposal received approval.

JOINT MEETING OF OIL AND OIL BURNING INDUSTRIES

A joint meeting of the oil and oil burning industries will be held at the Hotel Statler in St. Louis, Mo., on December 11, 12 and 13.

CENTRAL SANITARY MFG. CO. SUCCEEDS SERGEANT-DENNING CO.

Effective November 23, the Central Sanitary Manufacturing Co. succeeded Sergeant-Denning Co., Mexia, Texas. The change is in a way technical as the management remains the same. C. O. Sergeant will continue in active management. Additional capital has been added to conduct the growing business. The officers are: J. F. Denning, president; C. O. Sergeant, vice-president and treasurer, and F. D. Irwin, secretary.

CRANE VETERANS HAVE ANNUAL DINNER

Veterans of the Bridgeport, Conn., Division, Crane Company, recently were guests of R. T. Crane, Jr., president of Crane Co., at their sixth annual dinner. To be a Crane veteran requires twenty-five years of continous active service in the employ of the company. Informal speeches were enjoyed.

QUARTERLY DIVIDENDS DECLARED

Walworth Manufacturing Co., Boston, Mass., has declared a quarterly dividend of thirty-five cents per share on the common stock and seventy-five cents per share on the preferred. The former is payable December 15 to stockholders of record on December 5, and the latter is payable December 31 to holders of record December 21.

Jones & Laughlin Steel Co., Pittsburgh, Pa., has declared a quarterly dividend of 1¾ per cent on its preferred stock, payable January 1 to stockholders of record December 15.

The Worthington Pump & Machinery Co., New York City, has declared a quarterly dividend of 1¾ per cent on its preferred A stock and 1½ per cent on its prefered B stock, both payable January 2 to stockholders of record December 20.

The Chicago Nipple Manufacturing Co., Chicago, has declared an extra dividend of twenty-five cents per share and a quarterly dividend of seventy-five cents per share on its A stock, both payable January 1 to stockholders of record December 15.

BROOKLYN SPECIALTY HOUSE MOVES

N. Rothstein & Sons, formerly at 77 Marcy avenue, Brooklyn, N. Y., have moved their plumbing and heating specialty business to larger quarters at 693 Flushing avenue, in that city.

KESSELL & MULLER ADD TWO NEW LINES

Kessell & Muller, manufacturers' agents at 150 Nassau street, New York City, have been appointed selling representatives for the Structural Stone Co., Hubbard, Ohio, and the Lincoln Radiator Co., Utica, N. Y. Their territory for the new lines will be New York state and New England.

JOSEPH H. YOUNG CO. TO MOVE TO NEW LOCATION

Joseph H. Young Co., for many years located at 80-82 High street, Boston, Mass., will shortly move to a new location on Rutherford avenue, Charlestown, Mass. Growth of business demanded additional space which it was not possible to secure in the present building, and after an exhaustive study of all conditions, President Frank H. Niles secured the location at the Charlestown address where spur tracks, large well lighted offices and shipping rooms as well as several thousand sq. ft. of floor space will be available.

UNIFLOW PUMP & MANUFACTURING CO. FORMED AT DAYTON, O.

The Uniflow Pump & Manufacturing Co. has been organized at Dayton, Ohio, with a capitalization of $100,000, to take over and manufacture in production quantities a new idea in water systems invented by J. A. Snider. Development work has been going on for a period of three years. The incorporators, who also compose the officers and directors are: Harry G. Wagner, president; J. Arthur Snider, vice-president and general manager; John Westendorf, treasurer; Miss Edith M. Wagner, secretary, and Joseph F. Westendorf, all of Dayton.

CHICAGO SALESMEN SOUND OUT JOBBERS ON SALESMEN'S ORGANIZATION

Plumbing and heating salesmen of Chicago, Ill., are making an effort to secure the opinion of jobbers regarding the formation of an organization of salesmen connected with the plumbing and heating industry. Some time ago an enthusiastic meeting of the Chicago salesmen was held at the Auditorium Hotel and it was the unanimous expression that an organization similar to the association recently formed in the East be effected.

However, the salesmen wish to secure the support and encouragement of the jobbers and before proceeding any further are sounding them out. It is being suggested by the salesmen that an organization of salesmen would be helpful not only to the salesmen but to their employers and the plumbing trade generally. O. S. Lippman, of Kellogg-Mackay Company, was elected temporary chairman, and Frank Fabri, of J. B. Clow & Sons, temporary secretary.

DR. J. T. DURYEA ELECTED PRESIDENT OF WOLFF MFG. CORPORATION

Wolff Manufacturing Corporation, of Chicago, has this week concluded financing arrangements which will provide it with approximately $2,000,000 cash and result in a change in controlling interests. The financing plans, which were made by Dr. J. T. Duryea, president of the

Dr. J. T. Duryea, new president of Wolff Manufacturing Corporation, Chicago

Pierce, Butler & Pierce Mfg. Corporation, of New York City, and his associates, call for the authorization of $2,000,000 of preferred 7 per cent stock and 150,000 additional shares of no par value common stock. It is proposed to sell approximately $1,500,000 of the preferred stock to Dr. Duryea and his associates and to offer 100,000 shares of the common stock to the present stockholders at $6 per share. The unsubscribed portion will be taken by the new interests, who will have control after the financing. The stock has already been underwritten.

Dr. Duryea has been elected president of the Wolff Manufacturing Corporation, to succeed Nels Gross, who remains a director. Dr. Duryea takes the place on the board of directors left vacant by the resignation of F. K. Schrader. No further changes have been made in the personnel of the company.

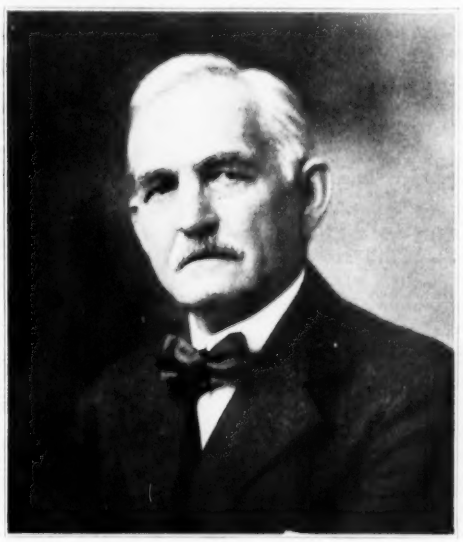
The Wolff Mfg. Corporation will have no connection whatsoever with the Pierce, Butler & Pierce Mfg. Corporation.

AMERICAN STEAM PUMP CO. BUYS ADVANCE PUMP & COMPRESSOR CO.

The American Steam Pump Co., Battle Creek, Mich., has purchased outright the complete assets of the Advance Pump & Compressor Co., also of Battle Creek. The factories adjoin each other, which feature gives the American Steam Pump Co. an additional unit which it is estimated will increase its production approximately one-third and also give it a larger line of pumps. The Advance plant will be devoted largely to the manufacture of duplex pumps. For the present no changes will be made in the personnel or officers of either organization.

F. E. MYERS, PUMP MANUFACTURER, CALLED BY DEATH

Francis E. Myers, president and one of the founders of the F. E. Myers & Bro. Co., Ashland, Ohio, one of the pioneer pump manufacturers of the country, died Sunday evening, December 2, at his home in that city after four weeks' illness in his 75th year. Mr. Myers was born in Perry township, about six miles east of Ashland, and spent his early life on the farm. In 1871, at the age of 22, he went to Ashland, where he secured a job as clerk in a drygoods store. A year later he became farm machinery salesman, a position he held until 1875, when he opened a little agricultural implement shop of his own, which he conducted until 1879 when he and his brother, P. A. Myers, formed a partnership and started to manufacture pumps. This business grew so rapidly that it is now the largest industry in Ashland, giving employment to a large percentage of the population in that city. In addition to being president of the F. E. Myers & Bro. Company, Mr. Myers was a director of The Union Trust Co. and The Guarantee Title and Trust Co., of Cleveland, also of the Nickel Plate railroad; president and director of the First National Bank and director of The Faultless Rubber Co., both of Ashland, O.; former president and builder of the Cleveland Southwestern & Columbus R. R.; former director of the Aurora, Elgin & Chicago R. R. Co.; and also directly associated with many other enterprises.



The late F. E. Myers

He was prominent in the Masonic fraternity and was also a member of the Colonial club, B. P. O. E., the Rotary club and the Chamber of Commerce at Ashland and many other organizations. He took an active interest in the development of his home town and, with his brother, gave a thirty acre parcel of land for a public park. He also was a generous contributor to the Lutheran church, Wittenberg college and Ashland college. His wife died last March, but two daughters and one son survive him, the latter being John C. Myers, advertising manager of the Myers company.

PERSONAL MENTION

A. M. Maddock, president of the Thomas Maddock's Sons Co., Trenton, N. J., was in Chicago this week.

Willard A. Speakman, president of the Speakman Company, of Wilmington, Del., has the sympathy of his many friends in the trade on account of the death of his wife, which occurred on Wednesday afternoon, November 28. Mrs. Speakman was a woman of great personal charm, was prominent socially and did much for charity.

Willis Frank Dowd, Jr., secretary of the Charlotte Pipe & Foundry Co., of Charlotte, N. C., and vice-president of Goss, Heath & Co., also of that city, was married recently to Miss Elizabeth Wells Roddey, of Rock Hill, S. C.

John H. Ballantine, Jr., vice-president of the Neptune Meter Co., New York City, has just started on a two months' bear-hunting trip in Idaho.

Frank P. Murphy, manufacturers' representative, of Cleveland, Ohio, has just returned from a central western trip on which he visited the plant of the Milwaukee Flush Valve Co., Milwaukee, Wis. He states that a decided feeling of optimism prevails among the jobbers in the Middle States.

Harry A. Stamper, formerly sales manager of the Monarch Engineering Co., Dayton, Ohio, has resigned from that position to become a manufacturers' representative, covering Ohio, Indiana, Illinois and Michigan. Prior to his connection with the Monarch Engineering Co., Mr. Stamper was for several years connected with the Vaile-Kimes Co., in the sales department. He will make his headquarters at 1411 West Third street, Dayton, Ohio.

J. P. Bittel, formerly with the S. F. Bowser & Co., Inc., Ft. Wayne, Ind., has been appointed superintendent of the Milwaukee Flush Valve Co., of Milwaukee, Wis. He is speeding up the production of the plant in fine shape.

J. P. Bittel

L. P. Eaton, district sales manager of the Chicago branch of the EverHot Heater Co., recently visited his company's home offices at Detroit, Mich.

J. R. Oatey, of the Yoder-Thomas Mfg. Co., of Cleveland, Ohio, was in Chicago on business this week.

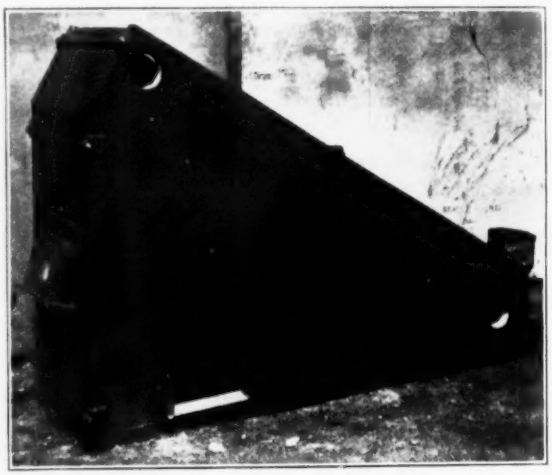
Will N. Larsen, of Manitowoc, Wis., sales representative for the Kellogg-Mackay Company, of Chicago, in northern Michigan and northern Wisconsin, has been visiting the plant and offices of the O-E Specialty Mfg. Company, Milwaukee, Wis., getting posted on this company's products.

R. E. Doherty, manager of the Calgary (Alta., Canada) branch of Crane, Limited, recently finished his twenty-fifth year of continuous service with Crane Co., and is now qualified for membership in the Crane Veteran League. The members of the Calgary branch staff took advantage of the occasion to show their esteem for the manager by marching to his desk in force and making him a present of real beaver driving gauntlets, an article of wear that may be used to much advantage in that part of the wide Crane field. Dr. Doherty, although taken by surprise, mustered the proper words to express his appreciation of the expression of loyalty and good will.

NEW INVENTIONS AND IMPROVEMENTS

An Interesting Oil Burner Boiler

On oil burner boiler, shaped not unlike the lean-to shanty of the early pioneers, has recently been placed on the market. It is four feet high, with its "roof" sloping backward at an angle of thirty degrees. What would be the front of the shanty is lined with fire brick, each brick



being tongued and grooved so that they fit together tightly, and no mortar is necessary. Near the roof of the shanty are several rows of water pipes with staggered knobs on their sides to intercept the oil flame and assist in the baffling. An interesting feature of this boiler is that the hot gases are forced against the pipes at their highest point, so that the greatest heat comes into contact with the hottest water and the cooler gases strike the cooler water near the rear of the boiler. The boiler is covered with asbestos which, in turn, is protected by metal sheeting.

Trade Literature

Improved Asbestocel Insulation

Johns-Manville, Inc., of New York City, has issued a twenty-page booklet, 3½ by 6 inches, entitled "How to Sell and Apply Johns-Manville Improved Asbestocel Insulation." The first part of the booklet is devoted to selling arguments and sales letters to assist the contractor in securing a contract for insulation. The latter part, under the heading "Executing Your Contract," gives directions as to the proper method of installing Asbestocel. The pamphlet contains many illustrations, including a cross section view showing corrugations in Asbestocel running around as well as along the pipe.

ENVELOPE STUFFERS

Excelso Specialty Works, Inc., Buffalo, N. Y.—"Hot Water at Lowest Possible Cost—No Gas Bills Seven Months of the Year"—is a new envelope stuffer written in a manner which should interest the house-owner by showing him how to have a supply of hot water without burning additional coal. It is explained that the Excelso water heater is a part of the heating system, and therefore burns no fuel.

Hotstream Heater Co., Cleveland Ohio.—"The Hotstream Indirect Water Heater—Plenty of Hot Water, No Extra Expense." An envelope stuffer emphasizing the point that this heater contains no coil in the fire-box of the boiler.

Peerless Heater Co., Pittsburgh, Pa.—"Peerless Gas Fired Automatic Hot Water Storage System" is a folder 3½ by 6½ inches, urging the desirability of an ample, never-failing supply of hot water,—"any quantity—any temperature—any time—at a minimum cost."

Twenty Years Ago in "Domestic Engineering"

December 5, 1903

Carnegie Willing to Give More to School of Technology.—Arthur A. Hemmerschlag, director of the new school of technology, now being built in Pittsburgh, Pa., announced this week that in addition to the endowment of $2,000,000, and the money furnished to defray the cost of the buildings, Andrew Carnegie is still willing to do much more to assist the school.

Mexico City to Have Large Bathing Establishment.—A handsome, commodious building to be fitted up as a modern bathhouse, is being erected on Victoria street, in the city of Mexico. There will be two large swimming pools, and three departments of tub baths, as well as Turkish, Roman and Russian baths.

Bridgeport, Conn., Wants a Plumbing Inspector.—The Building Trades Council, of Bridgeport, Conn., has presented a petition to the Board of Aldermen asking for the creation of the office of plumbing inspector and the appointment of a competent man to fill the position.

Abram Cox Stove Co.'s Plant Damaged by Fire.—Considerable damage was done, on November 25, to the plant of the Abram Cox Stove Co., in Philadelphia. The fire was restricted to one part only of the plant, and all departments have again resumed work.

Pasadena, Calif., to Amend Plumbing Ordinance.—The city council of Pasadena will shortly make some radical changes in the existing plumbing ordinance of the city. The principal amendment is the abolishment of the section requiring a $100 license fee from all practicing plumbers.

Back from Balkan Trip.—Charles R. Crane, first vice-president of Crane Company, Chicago, returned this week after ten weeks spent in studying present conditions in the Balkans, as compared with affairs in 1878, when he spent some time in that country during the Russo-Turkish war.

Honored by National Association.—Five new members have been appointed on the executive committee of the National Association of Master Plumbers. They are: R. B. Moodie, of Dayton, Ohio; Wm. F. Wilson, of San Francisco, Calif.; Chris. Irving, of Denver, Colo.; Wm. T. McGurrin, of Grand Rapids, Mich., and Wm. H. Rothrock, of Baltimore, Md.

New Rules for Plumbers.—At a meeting of the board of supervisors in San Francisco, Calif., on November 23, an ordinance was passed amending the existing plumbing ordinance, by taking from the board of health the power to pass judgment on certain sanitary devices.

Contract for Plumbing in Richard Mansfield's Home.—Hugh McPartland, of New London, Conn., is installing the plumbing in the country home being erected in that city, for Richard Mansfield, the famous actor.

December 12 and 13, 1923.—Quarterly meeting of the National Association of Brass Manufacturers, in New York City.

December 12-16, 1923.—Annual convention of the National Association of Refrigerating Engineers, at Memphis, Tenn.

January 14, 15 and 16, 1924.—Second annual Secretaries' Conference, at Evansville, Ind.

January 22, 23 and 24, 1924.—Annual convention of the Iowa State Master Plumbers' Association, at Davenport, Ia.

January 22, 23 and 24, 1924.—Annual convention of the Illinois Master Plumbers' Association at Peoria, Ill.

January 22, 23, 24 and 25, 1924.—Annual meeting of the American Society of Heating and Ventilating Engineers, in New York City.

January 29 and 30, 1924.—Annual convention of Wisconsin Master Plumbers' Association, at Milwaukee.

February 19 and 20, 1924.—Annual convention of the Ohio Master Plumbers' Association at Akron, O.

February 20 and 21, 1924.—The ninety-second regular meeting of the Central Supply Association, at Drake Hotel, Chicago.

February 20 and 21, 1924.—Annual convention of Nebraska Master Plumbers' Association, at Omaha, Neb.

March 10, 11 and 12, 1924.—Annual convention of Indiana Society of Sanitary Engineers, at West Baden Springs Hotel, West Baden, Ind.

March 11 and 12, 1924.—Annual convention of the Maine Master Plumbers' Association. City undecided.

March 11, 12 and 13, 1924.—Annual convention of South Dakota Retail Plumbers' Association, at Sioux Falls, S. D.

March 18 and 19, 1924.—Annual convention of New York State Master Plumbers' Association. City undecided.

March 24, 25 and 26, 1924.—Annual convention of Missouri State Master Plumbers' Association, at Springfield, Mo.

March 31, April 1 and 2, 1924.—Annual convention of the Tennessee Association of Master Plumbers, at Nashville, Tenn.

April 1, 1924.—Annual convention of the Massachusetts State Association of Master Plumbers at Boston.

April 21, 22 and 23, 1924.—Annual convention of the Alabama Association of Master Plumbers. City undecided.

April 24 and 25, 1924.—Annual convention of Georgia Association of Master Plumbers. City undecided.

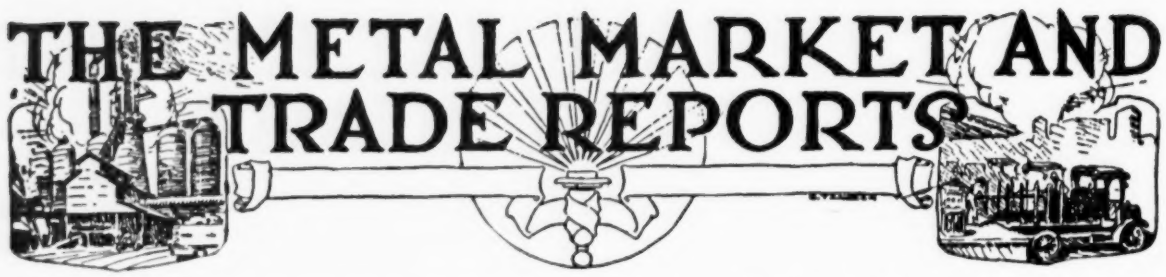
May 13 and 14, 1924.—Annual convention of Pennsylvania Association of Master Plumbers, at York, Pa.

May 22, 23 and 24, 1924. Annual convention of Nevada Association of Master Plumbers, at Reno, Nev.

June 10, 11 and 12, 1924.—Annual convention of the National District Heating Association at New York City.

June 24, 25 and 26, 1924. Forty-second annual convention of the National Association of Master Plumbers, at West Baden, Ind., with headquarters at the West Baden Springs Hotel.

THE METAL MARKET AND TRADE REPORTS



All market and metal reports are corrected by wire up to Thursday morning of each week.

STEEL AND IRON

New York, December 6.—The finished steel markets have been growing quieter because of the approach of the end of the year.

The price tendency has been downward for several months, but there are indications now that a more stable condition has been reached. In the first place, raw materials are advancing, for the first time in months, including pig iron, coke and scrap.

Pig Iron

The producers of charcoal pig iron in the Lake Superior district have advanced prices $1 per ton to $26, effective December 1. The marking up is in line with the advances in prices of coke pig iron throughout the United States. For the past ten days advances have been expected, but it was believed that this would amount to $2 per ton instead of $1.

Foundry No. 2, plain:—

Eastern Pennsylvania	$22.50@$23.00
Buffalo	21.50@ 22.00
Birmingham	20.00@ 21.00
Chicago	23.00@ 24.00

Copper

The buyer's price of copper as the week closed was 13⅛ cents per pound for electrolytic delivered to the Connecticut Valley, while the price asked by producers is generally 13¼ cents. However, the buyers usually win in the negotiations and seldom did sale go to the higher figure.

Tin

Tin registered the most drastic advance at London last week of any similar period this year, and sales there were 5,100 tons. Spot Straits was quoted at 47 cents and standard tin at the same price. Tin arrivals in November were 4,180 tons, of which 185 tons came to Pacific ports. Tin afloat is 4,044 tons.

Lead

The American Smelting and Refining Company advanced its price of lead $3 per ton last Saturday to 7 cents per pound, New York. There has been a genuine buying wave in lead all week and as much as 7¼ cents, New York, was paid by dealers. The East St. Louis market has reached 6.85 cents to 6.90 cents.

Zinc

Zinc consumers are still committed to a hand-to-mouth buying policy. Prices improved by $2 per ton during the week, the closing price being 6.40 cents, East St. Louis. Considerable December business yet remains to be placed.

Other Metals

Quotations on other metals in New York are as follows: Aluminum in 50-ton lots, 99 per cent and purer,

	27.00	cents per lb.
Antimony, Chinese brands	8.75	cents per lb.
Nickel, shot and ingot	29.00	cents per lb.
Nickel, electrolytic	32.00	cents per lb.

New York Old Metal Market

The following prices are current for old metals:

	Buying	Selling
Copper, crucible	11 to 11½ cents	12 cents
Copper, uncrucibled wire	10¼ to 10¾ cents	11¼ cents
Copper, light	9 to 9¼ cents	9¾ cents
Light brass	5 to 5½ cents	6 cents
Aluminum clippings	18 to 20 cents	21 cents
Brass, heavy mixed	5¾ to 6 cents	6½ cents
Lead, heavy	5¾ to 6 cents	6½ cents
Tea lead	4½ to 5 cents	5½ cents
Cocks and faucets	7¼ to 7½ cents	8 cents
Zinc, old scrap	4 to 4¼ cents	4¾ cents
Block tin pipe	36 to 39 cents	40 cents

Chicago Old Metal Market

The following are the current prices for old metals:

	Buying	Selling
Crucible copper	11 to 11¼ cents	11¾ cents
Heavy copper and wire	10½ to 11 cents	11½ cents
Light copper	9¼ to 9½ cents	10 cents
Red brass	8¾ to 9 cents	9½ cents
Heavy yellow brass	6 to 6½ cents	7 cents
Heavy lead	5¼ to 5½ cents	6 cents
Tea lead	4¼ to 4½ cents	5 cents
Light brass	6 to 6½ cents	7 cents
Solder joints	7 to 7½ cents	8 cents
Block tin pipe	34 to 36 cents	37 cents

IN THE CHICAGO SUPPLY MARKET

Chicago, December 6.—As the year nears its close, we are more and more surprised at the resistance to unwise propaganda that business and prices in plumbing and heating have had. A journal in an allied field states that, "Business has not shown in the past month the pronounced change to greater activity that has been looked for and this has rather strengthened the sentiment that business is in a period of recession."

In this manner do periodicals continue to sow unrest and encourage their readers to talk it. It encourages people to depend upon sentiment in buying rather than upon a cold analysis of the facts.

In this so-called "period of recession" the outlook for business in plumbing and heating is, on the contrary, very promising except to those who can only recognize prosperity in excessive expansion. Business is not headed toward the peaks of 1920 and 1921, it is true, and the slight upward curve in the general demand which started about the middle of October may be merely a temporary wave, but many in the trade are thankful for business as it is and speak of the gradual let-down in business as "an act of God."

The time was when it was considered good business for a salesman to load his customer up with twice as much goods as the customer could sell. And it is sellers of the same class who are now wailing because the buyer has learned not to overbuy,—he has learned that wisdom lies in depending not upon sentiment but upon an analysis of the facts.

Building construction is very active and there is a marked demand for building materials. The prices on building materials are firm with the exception of prices on portland cement. Open weather has helped to keep building going and contractors are taking full advantage of it. Many foundations are now under construction in Chicago to be ready for Winter building.

Building permits for Chicago are going through as rapidly as they have done for some time and, in spite of the fact that this pernicious propaganda has led to rather widespread predictions that there would be a decided let-up in building construction, there is no indication at the present time that there would be anything more than a temporary, seasonal lull.

The times are profitable for labor as well as for capital, and in spite of all that is being said to the contrary they are likely to remain so as long as progressive conservatism is allowed to hold sway, but business in plumbing and heating must have had unusual stamina to withstand the pessimistic doctrines that have been and are still being preached. In addition to this, the daily broadcasting of the distressing news from Europe and daily stories of what European conditions would do to the United States have had their effect. It is the opinion of several clear thinking men in the trade that business in plumbing and heating has been slowed up at least twenty per cent since last April by what are termed the psychological conditions of the market.

It is a pleasure to quote at this time the opinion of a man prominent in the trade who has never made any wild predictions. When asked about the future and the possible effect upon trade of the presidential year, he said: "That is all bunk. Business next March is likely to be as good as it was last March, and the only thing that may slow it up will be the unreasoning devotion to the old idea that the presidential year will be a bad year."

Soil Pipe

Wholesale prices on soil pipe have evidently found a common level at the five points advance announced three weeks ago. At the same time a certain amount of business is being done by one manufacturing company that is still five points in advance of the market. This would indicate firm prices, but it is a little unusual to find firm prices when the demand is on the decline. There is even a rumor of another five points advance.

The wave of soil pipe buying is about spent. Most of the jobbers have placed their orders for the first quarter's delivery. The next peak in buying may occur around next March. Although there is considerable inquiry for soil pipe yet, the demand is down to somewhere near the level of the middle of October.

Steel Pipe

The demand for steel pipe seems to know no law. The consensus is that trade in this commodity has increased during the last two weeks. It now requires about seven weeks for the jobber to get supplies from the mills. Jobbers are still placing orders well in advance of requirements, which enables the master plumbers and heating contractors in this territory to get fairly good service. A few weeks ago manufacturers seemed to think the outlook was favorable for catching up with back orders by the first of the year, but that hope has gone now, "and," said one manufacturer's representative, "it looks as though it would be a repetition of last year and that next Spring would not be unlike last Spring."

Wrought Iron Pipe

Prices are firm and there is no indication that there will be a change very soon. The demand is good and does not fluctuate greatly. Three weeks is the average time of delivery.

Enameled Ware

Miniature price wars in enameled ware that are started from time to time by jobbers in the Chicago district are not of the character to indicate a softening of prices. Price cutting is being indulged in to some extent now. Such price shading may occur at any time of the year, however, and in any commodity, even in the face of a stiff demand, without altering the fact that prices in general are firm. No drop in prices has been made by the manufacturers nor is any anticipated. It is a matter of profit cutting rather than a softening of prices. The demand has been heavy for delivery for the first quarter of 1924.

Pottery

There has been no general change in pottery prices since the first part of November, although they are not maintaining the stiff front they did some time ago. The demand has been going down hill, which is due largely to the preinventory season. Deliveries to the jobber still require two to three months on special items and in some instances a much longer time, although master plumbers and heating contractors in the Chicago district who anticipate their requirements two or three months ahead have not been embarrassed to any great extent by the pottery shortage.

One jobber showed a telegram this week from a pottery saying they would not agree to furnish certain special items before October, 1924.

Range Boilers

Business in range boilers is still slow. Prices remain unchanged. In some parts of the country jobbers are still throwing their profits on range boilers to the winds.

Plumbers' Brass Goods

One large concern made a cut a few days ago on the prices of special brass goods, but their prices on staples remain firm. Another company made a cut on staple brass goods, although the concern mentioned makes very little of this class of goods.

Some manufacturers say there has been quite a tendency for jobbers to buy at present prices and that they have been receiving substantial orders for immediate delivery for the last few weeks. Various manufacturers report sufficient business on hand to keep them going from three to seven weeks. A prediction by a jobber who keeps his fingers on the pulse of the brass goods market is that prices will stiffen from now on.

Boilers and Radiators

While the peak of the Fall demand has dwindled down considerably, there is still good business in boilers and radiators. There is little or no complaint among heating contractors about delivery of these supplies. Thirty-eight inch radiators, which have been difficult to procure in some instances, may now be had more readily. Manufacturers and jobbers, as a rule, have kept their stocks in good condition all the Fall.

IN THE NEW YORK SUPPLY MARKET

New York, N. Y., December 6.—Jobbers in New York have experienced one of the best Novembers in their history and have a large number of orders on hand for delivery within the first fifteen days of December. At this time though, liquidation of stocks on hand and balancing of books to see whether money has been made or lost, concern the trade more than buying. Some buying is being done, however, not for stock but for immediate requirements.

In general, prices are at a purchase-provoking level, but the trade is cautious and seems to be content to wait for inventory season to end. Everyone is expecting, however, that business for the new year will be good.

Soil Pipe

Manufacturers report that demand is fair since the price advance. Jobbers show a disposition to hold off on buying yet, though the experience of last year might lead one to suppose that soil pipe prices will go up from now until Spring.

Steel Pipe

Mills have about a four-day stock of steel pipe on hand these days and are producing at close to one hundred per cent of capacity. This is the report of one representative eastern manufacturer. The fact that, if production were to cease, the mill supply would be exhausted in four days with the amount of business now on hand, points to little relief in the shortage that has existed for the last sixteen months. Temporary relief has been gained by a slight let-up in the demand lately, and jobbers' stocks are in better shape than they have been for some time.

Wrought Iron Pipe

Jobbers' stocks are rather low and seemingly adequate to meet the trade demand. With the recent advance of ten per cent in wages at the mills, there is little expectation of a change in the mill price of wrought iron pipe. The large gas companies are coming into the market at this time for their pipe requirements and help swell the demand on the manufacturer. Some mills report that they are producing at about seventy-five per cent of capacity, and their stocks are in good shape, with prompt deliveries possible in most sizes.

Enameled Ware

There is still a great scarcity of the high grade fixtures of enameled ware, though the staple products are more plentiful than they have been. Demand holds surprisingly strong, both from the jobber and from the trade. On this product, seasonal influences seem to have little effect. The New York trade does not look for a change in price.

Pottery

The pottery market is somewhat unsettled as the result of the price reduction by a large firm, announcement of which reached the trade last week. Another manufacturer followed with a similar sheet, dated December 1; and, while the new price level is not general yet, it approximates what many in the trade think will be the price for sanitary pottery after the first of the year. The reduction ranges from eight to fourteen per cent on bowls, three to four per cent on tanks, over ten per cent on lavatories and varies on complete combinations. These figures represent the spread between the new sheet and the lowest price sheet in effect at the time of the drop.

This price reduction has come at a time when prices were weak anyway, although vitreous ware is still very scarce and porcelain products are in just slightly better shape. Buying right now is proceeding cautiously, and the state of demand is allowing some stocking by the jobber as old orders are filled. Inventory season has checked current orders, though business for January and February delivery is heavy.

Range Boilers

Present demand is not very heavy, but good business is looked for around the first of the year. One large firm advanced its prices last week to meet the advance announced by others around the middle of September and this is an indication that range boilers are standing up much better than heretofore.

Plumbers' Brass Goods

New York jobbers seem to have a good, uniform stock of brass goods. The demand is fair and the jobber can meet it from his present supply. Manufacturers' stocks are large and insure prompt delivery.

Boilers and Radiators

The December 1 change in the period price schedule brought in considerable business that was held over the last ten days to take advantage of the price reduction. Shipments are caught up and both boilers and radiators offer immediate delivery.

IN THE PHILADELPHIA SUPPLY MARKET

Philadelphia, December 6. The activity which the manufacturers and jobbers have been accustomed to for the best part of the year has gradually lessened. This is due largely to the holiday and inventory season.

Prices in all lines are gradually adjusting themselves and a much firmer tone was noted this week.

A survey this week of architects, builders, and jobbers in this territory has shown a marked improvement in confidence expressed for future business, although November building permits decreased a great deal compared with previous months of the year.

Manufacturers in nearly all lines are catching up steadily with orders and shipments are coming through more promptly, although the manufacturers are issuing the warning that with the demand that is expected next year deliveries will be likely to fall behind again.

Master plumbers and heating contractors report that although they are still busy, new business has fallen off to some extent.

Soil Pipe

The soil pipe market after the advance of last week, has again relapsed with very little activity being shown. Foundries report considerable new business for delivery after January 1. Jobbers' stocks are in good condition and in some instances too heavy for this time of the year. Firmer prices are looked for.

Steel Pipe

Heavy demand for steel pipe continued last week, with stocks in Philadelphia territory in good condition. Shipments are being made quite promptly from the mills, and the shortage which existed for some time seems now to be largely a thing of the past.

Wrought Iron Pipe

Stocks are in good condition to meet the lessened demand which has taken place this week. Shipments are being made more promptly from the mills than at any previous time this year.

Enameled Ware

Enameled ware is being received more promptly from the manufacturer than at any previous time this year. However, the demand continues to absorb it as it comes. Jobbers' stocks are improving however, although they are far from normal. An increased demand seems to have been noted by the jobbers this week.

Pottery

Unsettled conditions continue in the pottery field, although deliveries are improving regularly and jobbers' stocks are in fair shape to meet the demand. Numerous declines in price by several of the larger potteries have brought about the tendency to deliberate before buying. This has reduced the number of orders for future requirements.

Plumbers' Brass Goods

The demand for plumbers' brass goods continues fair. Jobbers' stocks are in good shape and deliveries are obtainable at once from the majority of manufacturers. Prices have taken on a much firmer tone and an advance is not unlikely.

Boilers and Radiation

Heating contractors have been holding their orders to take advantage of this decline of December 1. Deliveries on radiation improved slightly during the last week.

IN THE BOSTON SUPPLY MARKET

Boston, December 6.—A slight falling off in activity, which is usual at this pre-inventory season, is being noticed. A firm pig iron market has led to the belief that prices of all iron commodities will steady themselves and advances rather than declines are looked for.

Many of the manufacturers of brass goods have issued notices of price withdrawal and this would appear to mean that advances are in order. The copper situation is not such as to encourage any idea of a price slump in material into which this metal enters, and as lead is showing strength it would appear that as these are the three metals that concern the trade more than any others that the bottom has been reached.

That this belief is general is indicated by reports from manufacturers of a great amount of new business on the books for shipment after the first of the year. Everything points to a continuance of the good business that has been enjoyed for the past year.

Soil Pipe

Prices are firm. Stocks in hands of jobbers are well assorted and plentiful. Many large orders are reported to have been entered prior to the recent advance for delivery after the first of the year and the manufacturers state that they have a large tonnage on the books.

Steel Pipe

The demand for this commodity holds up well with stocks in hands of jobbers in a better condition than at any time this year. There has been no price change nor indication of any in the near future. Receipts are steady and well assorted.

Wrought Iron Pipe

Stocks are ample to take care of all orders received. Demand is slight. No price change is expected.

Pottery

Shipments are coming through with regularity and the shortages that have for months been causing great inconvenience are practically a thing of the past. The recent reductions announced have been the cause of a material increase in buying and the combination of prompt shipment and lower price has had a beneficial effect on this commodity.

Enameled Ware

With the falling off in demand, incoming shipments are being diverted to warehouses, and a working stock is being accumulated that permits of prompt delivery of many items that have been scarce for several months. Manufacturers report that they have a large volume of business on the books, some of which is entered for shipment well into the coming year, and as practically no cancellations have been reported, it would appear that by Spring there will be a material improvement in delivery conditions. Demand is slow at this time which is natural and expected.

Plumbers' Brass Goods

Many large orders have been entered with the factories for Spring delivery due to the stiffening market. Many of the manufacturers have withdrawn prices and the soft condition and price cutting that were noticed a few weeks ago have passed. Demand for present delivery is small as little buying for immediate delivery is noticed due to close of year. Inventories will be reduced to a low point as all have been holding off for the break which has apparently come and gone. Indications for a satisfactory season for 1924 are very bright.

Galvanized Range Boilers

There is a small demand at this season with an ample stock on hand to take care of all orders received. No price change is anticipated.

Boilers and Radiators

A falling off in demand has been reported for prompt delivery since the heating season is over. All orders for boilers and radiation can be filled promptly.

IN THE PACIFIC COAST SUPPLY MARKET

San Francisco, December 6.—Taking into consideration the time of the year, business conditions held up fairly well during the week. There was, however, a noticeable feeling among the jobbing trade that the demand for various material has fallen off considerably. This feeling is probably due to the fact that jobbers' stocks, being in better shape than at any previous time this year, the first jobber receiving an inquiry for merchandise is in shape to fill it in its entirety with the result that none of the other jobbers hear of it; whereas in previous months the same inquiry would have made the entire rounds of the various jobbers and each jobber in turn would have been after manufacturers for more stock, thus creating a false impression of the total amount of merchandise actually required.

The week also brought forth reductions in prices in all lines of plumbing materials to the trade, the amount of reduction varying in the different jobbing centers, the largest reduction being made in the Pacific Northwest with very little, if any, in Southern California. Prices in various jobbing centers on the Coast vary, due entirely to conditions surrounding that center and prices in one center cannot be taken as a criterion of the true market value of the merchandise in all centers.

Soil Pipe

This commodity is moving well. Jobbers' stocks are now somewhat broken due to delay in water shipments on account of labor troubles in Mobile. Foundry prices have stiffened up considerably and this has had a tendency to instill a better feeling with regard to the future business outlook in this line among the trade.

Steel Pipe

There was very little, if any, change in this commodity during the week. The demand seems to be holding up fairly well and jobbers' stocks are in about normal condition.

Enameled Ware

Enameled ware is still moving well. Jobbers' stocks are now in good shape and are able to take care of requirements as they come. There is still a noticeable tendency on the part of the jobbers to withhold orders for new stock from the manufacturers.

Pottery

This commodity is still moving well. During the week, two of the large Eastern potteries announced further reductions in their prices to Coast jobbers and this has had the tendency to cause a cessation of buying for future requirements until a more accurate knowledge of the true market price of this commodity can be ascertained.

Plumbers' Brass Goods

This product continues to move well. Jobbers' stocks are in good shape and no difficulty is being experienced in receiving prompt shipment from factories. Prices to the trade generally are closely following replacement costs and all declines have been reflected in jobbers' prices to the trade generally.

Boilers and Radiation

This line has become one of the most staple lines in the business with the demand active and prices firm.

North Chicago, Ill., has just passed a new plumbing ordinance.

With DEALERS *and* CONTRACTORS NEWS *and* VIEWS

Heating and Piping Contractors to Meet at Atlantic City

The annual meeting of the Heating and Piping Contractors National Association for 1923 was held on the shore of the inland sea at Hotel Drake, Chicago. The Atlantic ocean claims them for 1924. Atlantic City, the playground of the nation, is also a meeting place for the workers of the nation and elaborate plans are being made for the work to be undertaken by this association during the four days of the annual convention, May 26, 27, 28 and 29, 1924, at Atlantic City's Chalfonte Haddon Hall. W. H. Driscoll, of New York, heads the Convention Committee.

The decision to meet at Atlantic City was arrived at during a meeting of the board of directors, conference of the chairmen of the Eastern zones of membership and conference of the secretaries of local associations east of the Mississippi, which joint meeting was called by George M. Getschow, president of the association, and which was held in New York City, December 3, 4 and 5.

At the New York meeting referred to, Chairman Stewart A. Jellett, of Philadelphia, and Henry B. Gombers, secretary of the association, endorsed the plan for tax revision advocated by the secretary of the treasury of the United States.

W. L. Fleisher, chairman of the committee on standardization, conferred with the board of directors of the association on what the committee has done along the lines of standardization and on its future plans. It was announced that copies of "Engineering Standards" had been distributed to all members of the association who are in good standing and that the demand for this book from non-members has been so great that it has been placed on sale and that many orders have been received for it from United States and Europe.

What's Wrong in This Picture

Turn to Page 513 and Read the Answer

WOMEN'S AUXILIARIES

The opportunities for the women in the auxiliaries are constantly growing. The social side plays a big part, for in that way the auxiliaries and the local associations are brought closer together. From this grow the more serious and important things to be done—the betterment of sanitation, donation to the apprentice scholarship, and the work of helping the Bath a Day Movement by getting "The Story of the Bath" into the schools.

A Tureen Supper and card party was the way the women of Youngstown, O., entertained the master plumbers, November 24, at the Association rooms. Mrs. C. L. Vinapol, Mrs. C. J. Little, Wm. Hogg and Ed Williams won the prizes.

Mrs. W. A. Fritsch and her committee furnished the women of the Pittsburgh, Pa., Auxiliary a pleasant afternoon, November 14. There was a card party with bridge, five hundred and euchre being played. This was held in one of the large department stores. Many plans are being formed for the winter.

Mrs. George Cowles and Mrs. Joseph Murphy were the hostesses at the November 20 meeting of the Ladies' Auxiliary of Los Angeles, Cal. They planned a surprise for the members by following the business meeting with a card party and supper. The rooms were handsomely decorated with clusters of yellow chrysanthemums in baskets and vases. The prize winners were Mrs. D. McAlpine, Mrs. Tom Scott, Sr., and Mrs. O. R. Earle.

The Detroit Auxiliary commenced its social activities for the winter November 21, with a card party and luncheon. At the next business meeting, December 12, Mr. Hrar will give the women an educational talk. And on December 13 the Master Plumbers' Association will entertain the Auxiliary at an elaborate dancing party. This party will serve as a drive for additional members for the Auxiliary.

The master plumbers, association members, and men from the supply houses helped make the afternoon Tea Party and sale of household goods, in Kansas City, Mo., a success. The party was held at the home of Mr. and Mrs. George Hayes and the Auxiliary netted $115.00. December 14, the Kansas City Auxiliary will install its new officers. It is expected that the promise of a live Santa Claus with his wife, Mrs. Santa, will attract a large crowd to the home of Mr. and Mrs. E. D. Hornbrook, December 22, as at that time the Auxiliary will hold its annual homecoming Christmas party.

Dayton, Ohio, Auxiliary celebrated its sixth anniversary at the regular meeting November 15. The hostesses were Mrs. C. M. Gramger and Mrs. Sam Fahrer and they prepared a birthday cake for the Auxiliary with six candles on it. The President presented each guest with a corsage of roses. Plans were made for a Christmas party to be held December 13.

Wanted—News of the Activities of Every Auxiliary.

BATH A DAY MOVEMENT

A BATH A DAY KEEPS YOU FIT EVERY WAY

49

Now 49 schools know the lessons that are taught through the reading of "The Story of the Bath." Jefferson City, Mo., is the latest to introduce the story to its boys and girls. "During Educational and Health Week," writes Paul J. Schultz, of Jefferson City, "each teacher read the story to the pupils in her room."

MASTER plumbers' associations in a number of cities are working out plans for the presentation of "The Story of the Bath" to their public and parochial schools. That is the right idea. All schools should be included. Plans should also include colleges, private schools and the like.

Among the associations now making plans may be mentioned those of San Francisco, Davenport, Ia.; Atlanta, Ga.; New Bedford, Mass., and Saginaw, Mich.

The time to act is now. To wait until next spring is to lose the interest of a large part of the school year.

Slogan in the Telephone Book

Edward F. O'Connor, plumber of Denver, Colo., makes good use of the slogan, "A Bath a Day Keeps You Fit Every Way." At the top of a page in the classified section of the Denver telephone directory Mr. O'Connor has taken a large space. In the center of this space is printed the slogan cut, and above the cut are the words, "Have You Had Your Bath Today?" This is good advertising for a Bath a Day. And it is good advertising for Mr. O'Connor.

The Illinois Campaign

In the announcement of the big campaign, started by the Illinois Master Plumbers' Association, to put "The Story of the Bath" into every school in the state, are the following words: "We are engaged in the business of sanitation, and the responsibility rests on ourselves to see distributed in our schools of Illinois the booklet entitled, 'The Story of the Bath'." In other words, if the men and women of the plumbing and heating industries do not educate the public, it's a sure bet that nobody else will.

The Illinois Association is doing its part in the education of the public. Following the reading of "The Story of the Bath" in the schools will come an essay contest, the subject being, "The Value of Frequent Bathing." The contest is open to all school pupils in Illinois. An essay can not contain more than 300 words, and the prizes range from $100 for the first to $50 for the second. Then there are ten prizes of $10 each and ten of $5 each. The contest will close January 12, and the prizes will be awarded at the annual state convention in Peoria, January 22 to 24.

THIS AND THAT—HERE AND THERE

This column is devoted to personal mention of plumbing dealers and heating contractors. News items from these branches of the trade are urgently solicited.

"Service is our Watchword" is an appropriate electric light sign recently placed in the show window of Charles Spangler's plumbing store in Birmingham, Ala. Spangler expects to move the first of the year to Five Points, a fashionable residential section.

James S. Cassedy, of Cambridge, Mass., past-president of the National Association of Master Plumbers, has the sympathy of his many friends throughout the country on account of the death of his wife, which occurred last week after several months' illness. Mrs. Cassedy took a leading part in charity work in her city, and her death is a great loss not only to her husband and four children but to organized charity in Cambridge.

A. J. Silva, of San Francisco, Calif., one of the prosperous plumbers of the city, now rides up to the Master Plumbers' headquarters in a fine new limousine.

G. Y. Morton, of San Francisco, Calif., is one of the master plumbers whose labors have not been in vain. He has just finished a new home in one of the fashionable suburbs, and to make sure of his bath-a-day has installed three bathrooms.

A. E. Warren, manager of Star-Pointer Pump Mfg. Co., Menasha, Wis., attended a meeting of the Credit Men's Association in Chicago, Ill., November 27 and was the guest of E. A. Maginnis of the Chicago office of the Standard Sanitary Manufacturing Co.

J. E. H. Dorsett, plumbing and heating contractor, Lakeland, Fla., will finish the plumbing contract on the new Indian River Hotel at Rockledge, Fla., by December 15, and has just completed the plumbing and heating on the Umatilla school at Umatilla, Fla.

The Sanitary Plumbing Co., San Luis Obispo, Calif., has moved into new quarters on lower Figueroa street.

BLACKBOARD EPIGRAMS

KEEPING quiet may be considered modest, or conservative, or whatever you may care to call it, but it doesn't build business. A firm must let the public know where it is, what it is doing, and that it is very much alive. Not to do this is to miss many good sales.

The Blackboard Epigrams—an epigram written each morning of the week on a blackboard in front of a shop—provide one way for making a little noise and letting the public know that a live firm is on the job.

Try these seven epigrams on a blackboard and watch those who pass pause and read:

Few people are ever on time; they are either early or late.

* * *

You can't always judge a man's worth by the taxes he pays.

* * *

Grafters often break in where burglars fear to tread.

* * *

There is no way to get even with a man who owes you money.

* * *

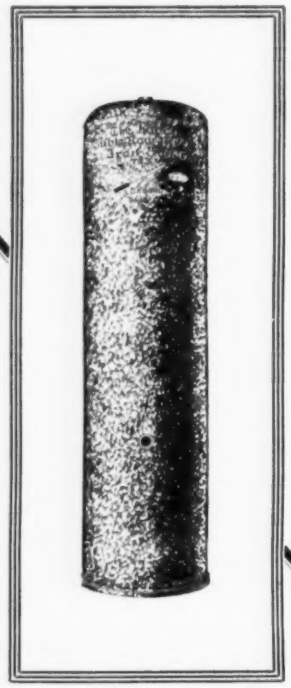
Just as well set a hen on china eggs as to brood over the past.

* * *

A sound sleeper makes so much sound that others can't sleep.

* * *

There is plenty of food for thought in a bare cupboard.



KOVEN

(*Riveted*)

RANGE BOILERS

Koven Riveted Galvanized Range Boilers have been made in the same manner and of the same materials for the past thirty-five years.

Thirty-five years is quite a spell — it almost goes without saying that to stay in business over such a period of time means that the product must be just about right—both in quality and price.

Koven Range Boilers *are* right, in every way. It's no experiment to use them.

L. O. KOVEN & BROTHER

Main Office and Works:
154 Ogden Ave. Jersey City, N. J.
Warerooms:
50 Cliff St. New York City

CONTRACTS AWARDED

Co-operation is in the air. Even the column of "Contracts Awarded" has this co-operative spirit, because it serves to bring the jobber and manufacturer in closer touch with the master plumbers and heating contractors. Co-operate with this column, and send us news of your new contract as soon as it is awarded.

The Gem City Plumbing and Heating Co., 716 Main street, Quincy, Ill., has the $10,000 plumbing and heating contract on the new Central Fire Station.

Phillips-Getschow Co., 128-130 West Kinzie street, Chicago, has the $100,000 heating contract for alteration work in the Fair Department Store. This consists of relaying the caissons thereby making a new sub-basement.

C. H. Julian, 1228 Second street, San Diego, Calif., has been awarded the plumbing and heating contracts on the new Army and Navy Y. M. C. A. building.

Frank G. Hamer, 129 East Third street, Cincinnati, has the plumbing contract on the M. Y. Cooper residence.

The Johnson & Davis Plumbing & Heating Co., 427 Fifteenth street, Denver, Colo., has the plumbing and heating contract on the new large state hospital being erected by the University of Colorado.

Maurer Bros. Co., 8600 Detroit street, Cleveland, O., has been awarded the heating and piping contracts on the buildings of the United Banking Co., and the Neighbors Realty Co.

Joseph Appleton, 1827 Westminster street, Providence, R. I., has the following contracts: Plumbing in the new George Lee two-family house; new bathrooms for M. Vigneaux, Arthur Loranger, the Jonathan Chase estate, and water heating in the W. S. Innis house.

J. L. Powers, 227 East Main street, Bennettsville, S. C., has been awarded the heating contract on the Woman's College Dormitory, Winthrop College, Rock Hill, S. C.

Folsom & Mayer, Santa Monica, Calif., will install the plumbing in the Santa Monica Christian Church.

Lamping Bros., 2733 Woodburn avenue, Cincinnati, O., has been awarded the plumbing contract amounting to $4,500 on the C. L. Harrison residence.

Green & Firth, 348 Riverside avenue, Jacksonville, Fla., have the plumbing contracts for the B. S. Woundby job near Franklin.

Fred Cantrell & Co., 607 Market St., Chattanooga, Tenn., will install the plumbing, heating and lighting in the $100,000 Park Place Grammar School.

Charles Geiser, Lander, Wyo., has the plumbing contract on the Amoretti Inn, Moran, Wyo.

George E. Foley, 1115 East 19 street, Kansas City, Mo., has the $8,700 plumbing and heating contract on the high school at Bethany, Mo.

The Scott Co. and J. A. Pinkerton, San Francisco, Calif., have the plumbing and heating contracts, respectively, on the new home of the San Francisco Chronicle.

Harvey W. Strader, 139 East Lake street, and Hanke Heating Co., 606 Third avenue, S., Minneapolis, Minn., have the plumbing and heating contracts respectively on the addition to the Aldrich avenue Presbyterian church.

The Charles Thatcher Co., 39 Center street, Waterbury, Conn., has been awarded the plumbing and heating contracts, amounting to $3,840, for the Sprague Sanitaries.

J. E. H. Dorsett, Lakeland, Fla., has the $9,000 plumb-

ing and heating contract on the Lakeland, Jr., High School, also the plumbing contract on the South Side Baptist Church.

Alexander Coleman, 706 East Ellis street, San Francisco, Calif., on a bid of $22,470, has been awarded the plumbing contract on the new Mt. Zion Hospital.

Fred Gates, 33 East Ninth street, Cincinnati, will install the plumbing in the residence of F. K. Kessler.

A. B. Moore & Co., Daytona, Fla., has been awarded the plumbing and heating contracts on the $500,000 Hotel Coquina to be erected at Ormond Beach, Fla.

W. B. Guimarin, 1226 Washington street, Columbia, S. C., will install the plumbing and heating in the new wing being added to the Woodrow College.

Price & Welker, 707 Canal road, Cleveland, O., have been awarded the heating and piping contract on the American Stove Supply Co.'s new building.

Loftis Plumbing & Heating Co., 138 Marietta street, Atlanta, Ga., has been awarded the plumbing contract on the new Westminster Presbyterian Church.

Frank Dupuis Co., 599 Main street, Pawtucket, R. I., has been awarded the following contracts: Plumbing in the Gymnasium for the City of Providence; heating and plumbing of the Wm. P. Young residence; plumbing and heating in the Jewish Orphanage; plumbing in the plant of the Mackie Worsted Co., Centredale, and plumbing in the new addition to the Woonsocket Hospital.

The American Plumbing Co., 76 West Second street, Winona, Minn., and the Cuddy Plumbing and Heating Co., 634 South Front street, Mankato, Minn., have the plumbing and heating contracts, respectively, on the Junior-Senior High School in Waseca, Minn.

John C. Riha, 4713 South Twenty-fourth street, Omaha, Neb., and Mayer & Horrall, 45th and Military avenue, Omaha, Neb., have the plumbing and heating contracts, respectively, on the Settlement Home.

Martin Daly, 626 Elm street, Cincinnati, O., has the $1,300 contract on the office building at 900 Main street.

A view of the gigantic boiler room in the new plant of the Johns-Manville, Inc., at Waukegan, Ill.

READING

No. 210

NINE times out of ten your customers can be quickly convinced of the complete satisfaction and economy to be derived from the installation of a coal burning Water Heater.

Reading Water Heaters burn coal and are made in four sizes, capable of supplying from thirty gallons to two hundred gallons of clear hot water per hour.

The popular Reading No. 210 shown above has a capacity of from forty to eighty gallons per hour on one bucket of coal per day. Reading Water Heaters are in use wherever hot water is required and they more than pay for themselves, with comfort and convenience.

The coupon below will bring you all the information. Send it today. Then try a Reading on your next water heater job.

Reading Foundry & Supply Co.
7th & Chestnut Sts., Reading, Pa.

Reading

THE SUPERIOR SOURCE OF SUPPLY

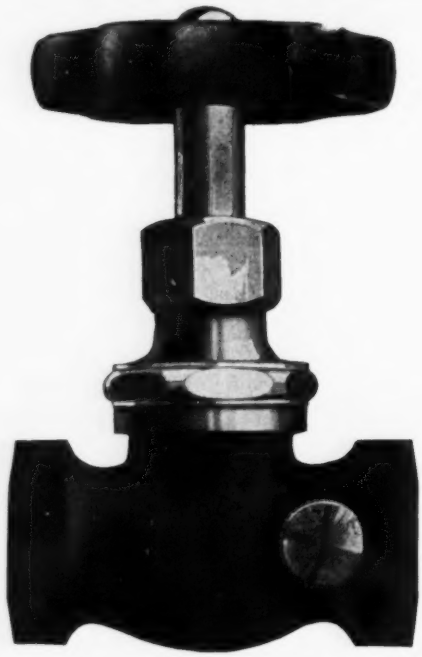
Reading Foundry & Supply Company,
Seventh & Chestnut Sts., Reading, Pennsylvania.
Department D.

Gentlemen:—Please send me your catalog and full particulars about Reading Water Heaters.

Name .....

Address of shop .....

City ..... State .....



BARRETT WASTOP

A Compression Stop and Waste Cock

Designed especially to meet the demand for a non - automatic compression stop and waste cock with bonnet and stuffing box.

Perfectly proportioned—just the right weight for practically any job, yet it sells at a moderate price.

Made of the best red metal—tested at 200 pounds pressure and fully guaranteed.

Sold Thru Your Jobber

Cultivate your jobber's co-operation. Not only is your credit standing with him a most valuable asset, but by concentrating your purchases in a single shipment he saves you considerable in transportation charges.

The Cleveland Brass Manufacturing Company

4606-4700 Hamilton Ave. CLEVELAND, O.

J. Hokom Co., 4312 Moneta Ave., Los Angeles, Calif., has been awarded the heating and ventilating contract on the Fairfax High School.

The Arthur McKinley Plumbing and Heating Co., 1012 Troost avenue, Kansas City, Mo., has the plumbing and heating contract on the Westport, Jr., High School.

J. L. Powers, 227 East Main street, Bennettsville, S. C., has been awarded the heating contract on the $100,000 auditorium at Winthrop College, Rock Hill, S. C.

G. H. Wochlcke, 1304 Riverside avenue, Jacksonville, Fla., has been awarded the plumbing contract on the residence of N. S. Ruston.

ILLINOIS CHAPTER, A. S. H. & V. E., TO MEET DECEMBER 10

The regular monthly meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers will be held at the Engineers' Club, Chicago, on Monday evening, December 10. An interesting evening is promised.

PHILADELPHIA HEALTH DEPARTMENT URGES PROPER HEATING AND VENTILATING

Importance of proper ventilation and proper heating of homes during the fall, winter and spring, was urged in a recent bulletin of the Philadelphia, Pa., Department of Public Health.

"The hot, dry, stuffy air which one notices on entering some homes at this time of the year is indicative not only of an unhealthy atmosphere but of gross extravagance in wasting fuel," says the bulletin. "An overheated home is a poorly ventilated one. In order that the indoor atmosphere be healthful it should be maintained at a temperature of 65 to 68 degrees Fahrenheit, with sufficient amount of moisture to bring about comfort," it adds.

In conclusion the bulletin points out that to be efficient a heating system must be combined with adequate ventilation which adds moisture to the dried air, carries away the contaminated atmosphere and supplies fresh air.

MASTER PLUMBERS' REPRESENTATIVE ADDRESSES ARCHITECTS IN FLORIDA

The most forward step taken by the master plumbers of Florida in a number of years was evidenced by the address of Alexander Orr, Jr., President Florida State Plumbing and Heating Dealers' Association, delivered before the Florida State Architects' convention held recently at Orlando.

While nothing definite was accomplished by his talk, Mr. Orr created an impression which will ultimately work many changes, it is expected.

Mr. Orr opposed the sub-contracting of plumbing and heating and advocated the direct contracting with the owners of buildings. He pointed out that obtaining the job from the general contractor often caused the master plumber to do the work at an actual loss or at a reduced price, which in many cases caused inefficiency and dissatisfaction.

It is believed that an effort will be made by the plumbing and heating industry in Florida to educate and impress upon building owners that better results can be obtained by contracting direct with the plumbing and heating contractor instead of having the heating and plumbing contracts sublet by the general contractor.

PUBLIC HEALTH

"Less than forty years ago yellow fever and smallpox were frequent callers. Plague spots dotted our landscape. Now all that is changed. And what did it? This, and nothing more: Pure water piped into the home; poisonous waste piped out of the home." —*"The Story of the Bath." Had it not been for the plumber this could not have been accomplished. To him is due great credit toward bringing about better sanitation and improved public health.*

The Blakely Poor District, Blakely, Pa., will establish a $20,000 sewer system and disposal plant next Spring.

Fostoria, O., is considering a sewage disposal plant to cost about $75,000.

Centuria, Wis., is planning the construction of a sewer system.

Pelican Rapids, Minn., failed to vote sewer bonds at a recent election and the matter awaits another vote.

Sewer bonds failed to carry in Montgomery, Ala., but another election will be held later on.

Henning, Minn., is considering the construction of a $60,000 sewer system.

An election is to be held soon on bonds for $33,000 for a sewage disposal plant and an outfall sewer for Pismo Beach, Calif.

Bonds for $53,000 have been voted by Stroud, Okla., for main sewers and a sewage disposal plant.

Delmar and Salisbury, Del.; Metuchen, N. J., and Fremont, O., plan additions to their sewer systems.

It is predicted that one of the first acts of the York, Pa., city council will be the authorization of a loan to complete the sewage disposal plant.

PURE WATER

Often a manufacturer seeking a new location puts the question as to the purity of the water supply. He is interested in the health of his family and of his employes. The progressive plumber should always be among the foremost in his community to preach pure water.

Bonds for $100,000 have been voted by Owensboro, Ky., for extension of water mains.

Eagle Lake, Fla., is about to award a contract for the construction of a water-works system with a tank to hold 50,000 gallons.

A preliminary survey has been made by Pell City, Ala., on water-works and sewer system to cost about $50,000.

The Birmingham Waterworks Co., Birmingham, Ala., will put in eight concrete water filters at the Shade Mountain plant.

Anacortee, Wash., is to establish a pumping station at Lake Campbell and install four miles of water mains.

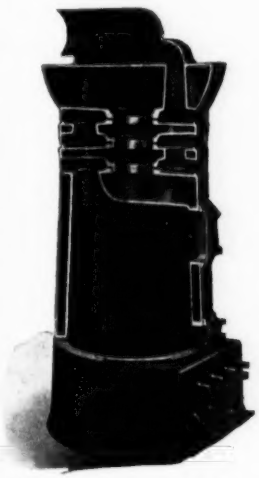
Brownsville, Ore., has voted $6,800 water-works bonds.

A gravity water system to cost $90,000 has been authorized by Hickory, N. C. It will probably be extended to near-by towns at a cost of about $2,250,000.

Exhibit of Kohler products at the annual Field Day and Festival last summer at Kohler, Wis.

Page Boilers

"The Distinguished Service Line"



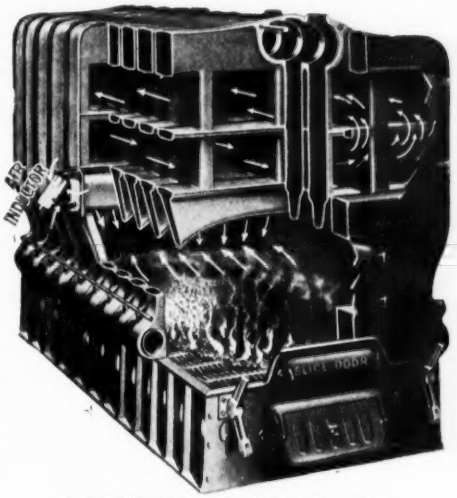
No. 23D Volunteer Steam Boiler Sectional View

Immediate delivery of boilers may be had from stock at our warehouse nearest you.

Increased manufacturing and warehousing facilities insure your having Page Boilers on the job when you need them there.

"Volunteer" round and "Monarch" square sectional —regular type and up-draft smokeless—boilers

for heating Residences, Churches, Hospitals, Schools



S-40-12 Monarch Up-Draft Smokeless Boiler Sectional View

Our catalog and trade preferential discount will interest you. Write us.

THE WM. H. PAGE BOILER CO.

Established 1856 Incorporated 1877

Makers of Boilers for Over Half a Century

GENERAL OFFICES: 58 W. 40th STREET, NEW YORK

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Depend on Deming

A Special Offer to Dealers on Marvel Demonstration Outfit

DEALERS everywhere tell us that their best sales-maker is a Deming Marvel Outfit displayed in the window or on their floor. Often it is hooked up and shown in actual operation.

It *is* a handsome little outfit,—clean-cut, compact and just as sturdy as it looks. It is entirely automatic in action, quiet running, costs very little to operate, and is very attractively priced.

It has many important mechanical features, easily pointed out to prove it the biggest dollar for dollar value of any home water plant on the market.

As an inducement to put one of these Marvel demonstration outfits to work for you, we are making an attractive proposition to dealers. Write for full information

THE DEMING COMPANY
Established 1880 **SALEM, OHIO**

The nearest distributor will give you close co-operation in making sales in your territory.

Boston	Chas. J. Jager Company
Chicago	Henton & Hubbell
Denver	Hendrie & Bolthoff Mfg. & Sup. Co.
Detroit	Standart Bros. Hardware Corp.
Kansas City	English Tool & Supply Co.
Louisville	Laib Company
New York	Ralph B. Carter Company
Philadelphia	W. P. Dallet Company
Pittsburgh	Harris Pump & Supply Company
San Francisco	Crane Company

Deming
HAND AND POWER PUMPS FOR ALL USES
PUMPS

Thayer, Mo., is to vote on a $55,000 water-works bond issue, as bonds recently voted were declared invalid.

Preliminary surveys are in progress for a new water-works system for Casper, Wyo., to cost about $2,500,000.

Obituary

John H. Adcock

John H. Adcock, who had been engaged in the plumbing and heating business in Somerville, Mass., for many years, died at his home in that city on Thursday, November 22, after a few weeks' illness.

Thomas A. Little

Thomas A. Little, who for several years conducted a plumbing business in Wheeling, W. Va., died recently in a hospital in Washington, D. C., where he had been spending a few weeks visiting relatives. Two sisters survive him.

Charles Stewart

Charles Stewart, plumbing dealer of Wilmington, Del., died recently at his home in that city. Mr. Stewart had been engaged in the plumbing business in Wilmington, for more than fifty years, and was at his office within two days of his death. He was a highly esteemed member of the Master Plumbers' Association of Wilmington.

John Mitchell

John Mitchell, one of the oldest and best known master plumbers in Washington, D. C., died November 13, at his home in that city, in his 84th year. He was born in Scotland and came to Washington and engaged in the plumbing business when a young man. At one time he was president of the Master Plumbers' Association of Washington, and for years has been honorary president. He retired from business about twenty years ago.

Jack Croak

Jack Croak, heating and plumbing contractor of Hammond, Ind., met death by drowning in the Illinois river near Bath, Ill., on Tuesday, November 27. He and three other men were returning from a hunting club when their launch began to fill with water. It sank within thirty seconds, and encumbered by heavy clothes three of the party were unable to reach shore. Mr. Croak was 33 years of age, and leaves a widow and a little daughter. He entered the plumbing business five years ago and has handled some of the largest contracts in Lake county. He was held in high esteem by the people of his city. His body was not found until Wednesday noon, twenty-four hours after the accident. Funeral was held last Saturday.

George B. Smith

George B. Smith, retired master plumber, died Sunday morning, December 2, at Rockford Hospital, Rockford, Ill., following an illness of several months. He was born November 14, 1871, in Rockford. At one time he formed a partnership with Edward Maher, in the plumbing business. Owing to Mr. Smith's ill health the partnership was later dissolved. For two years he traveled for a plumbers' supply company. He was past-treasurer of the Illinois State Master Plumbers' Association and active in the Rockford Master Plumbers' Association. He also was a member of the Masonic fraternity and a charter member of the Rockford chapter of Eagles.

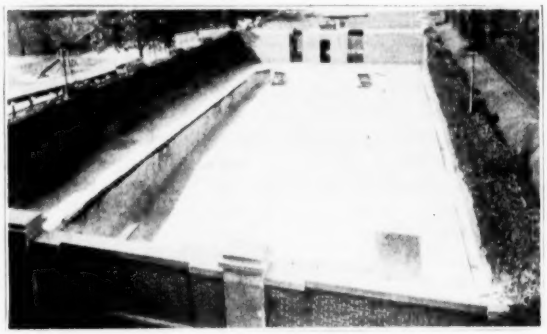
SWIMMING POOL NEWS

The "old swimmin' hole," with its cool depths and its overhanging branches from which the kids swung off, perhaps to dive head first into the mud bottom, was all right in its day, but the modern swimming pool, with its graduated depths, tiled bottom and sanitary regulations, combines pleasure and safety. Public swimming pools are signs of progressive, happy communities, where people work with zest because they have the opportunity to play after work.

Long Beach, Calif., bathhouse, known to thousands of tourists, is being razed to make way for a modern bathhouse and pavilion, to cost approximately $200,000.

Various civic clubs of Joplin, Mo., have petitioned the city commissioners for a swimming pool and clubhouse in one of the parks.

B. L. Dean, 626 West 153d street, New York City, plans the construction of a swimming pool in connection with a large apartment building.



A municipal swimming pool in Philadelphia, Pa.

Philadelphia, Pa., department of public welfare, is having plans drawn for a swimming pool and shelter house to cost $50,000.

Rainero Bros., Bristol, Va., will construct a swimming pool in connection with a park.

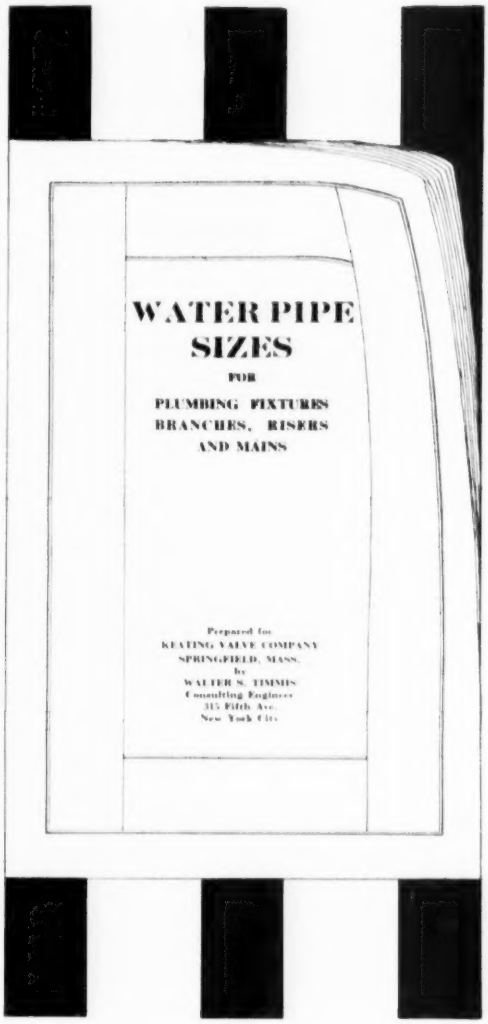
Natatorium Development Corporation, Wilmington, Del., has been incorporated to own and manage swimming pools.

Dodge City, Kans., is planning the construction of a swimming pool.

CHICAGO PLUMBING AND HEATING FIRM HAS BIG CONTRACTS

John Degnan, Inc., Chicago, has the contract for the plumbing in the American Furniture Mart, now being built at Lake Shore Drive and Erie street in Chicago, and which will be the largest concrete structure under one roof in the world. The firm also has the plumbing contract for the new Wrigley building in Chicago and the plumbing and heating contracts for the addition to the Tuller Hotel at Detroit, Mich., and the 1200 room Cadillac Hotel, at Detroit. John Degnan, Sr., is president of the firm, John Degnan, Jr., vice-president, and Frank J. Degnan, secretary and treasurer. A branch is maintained at Detroit.

Paul Vance, of the Machinery Pipe & Supply Co., San Diego, Calif., and Mr. Hudson, of the same firm, together with Guy Warner, a well-known San Diego, Calif., plumber, recently went on a quail hunt. After many hours of useless effort they thought they would try for a few ducks. After rowing six miles they brought down one mud hen.

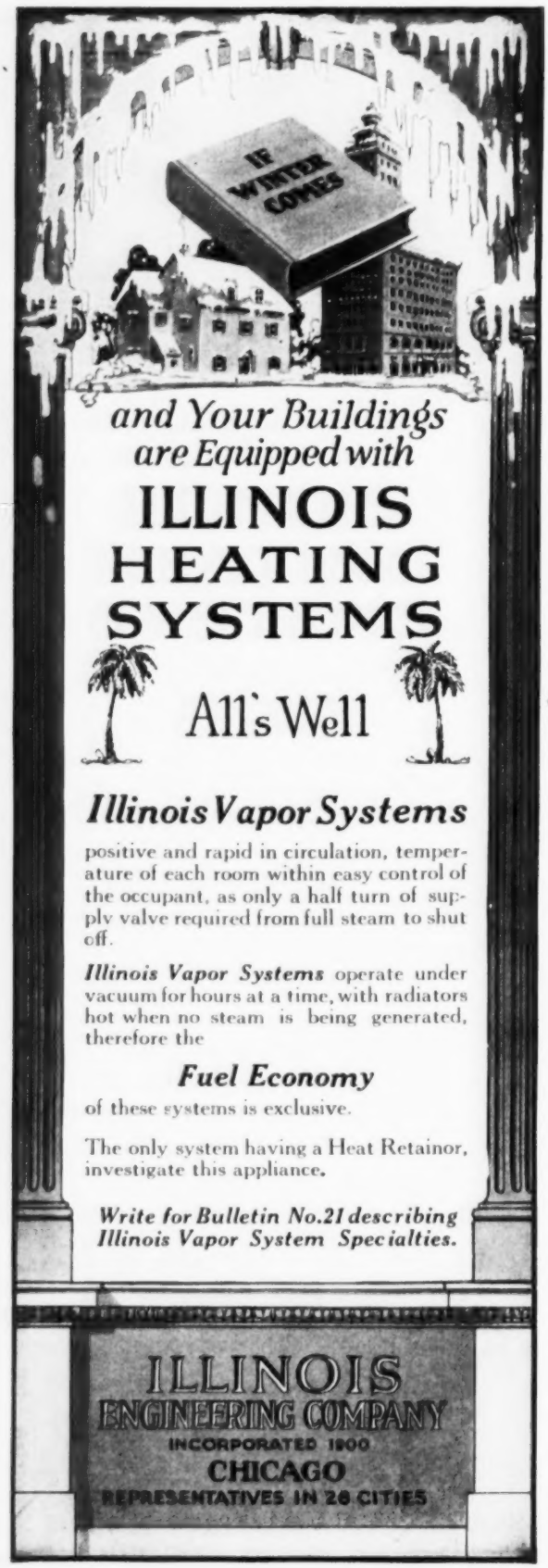


Book of Knowledge

THE book shown above giving tables pertaining to water pipe sizes for plumbing fixtures, branches, risers and mains is something the trade has long desired. These tables can be easily analyzed and relied upon as being authentic.

May we send you one of these books?

KEATING VALVE COMPANY, INC.
71 Taylor Street SPRINGFIELD, MASS.


IF WINTER COMES
and Your Buildings are Equipped with
ILLINOIS HEATING SYSTEMS
All's Well
Illinois Vapor Systems
positive and rapid in circulation, temperature of each room within easy control of the occupant, as only a half turn of supply valve required from full steam to shut off.
Illinois Vapor Systems operate under vacuum for hours at a time, with radiators hot when no steam is being generated, therefore the
Fuel Economy
of these systems is exclusive.
The only system having a Heat Retainor, investigate this appliance.
Write for Bulletin No.21 describing Illinois Vapor System Specialties.
ILLINOIS ENGINEERING COMPANY
INCORPORATED 1900
CHICAGO
REPRESENTATIVES IN 28 CITIES

CANADIAN HEALTH OFFICER URGES BETTER VENTILATION

Some valuable recommendations and suggestions regarding the ventilation and heating of dwellings was given to our correspondent recently by Dr. Hector Palardy of the Municipal Health Department of Montreal, Quebec, Canada.

Dr. Palardy first discussed at length the scientific evidence which proves briefly that carbon dioxide in the air is in itself harmless and that which causes a closed room to become unhealthy is the lack of air circulation and the ever-decreasing humidity of the air. At this point he arrived at the same conclusion as Dr. Leonard Hill of the British Council of Medical Research, whom he quotes as follows:

"Successful ventilation depends upon the prevention of the accumulation of animal heat and the uncomfortable cooling of the body." After some considerations as to the extent to which it is advisable to open windows in winter, the doctor proceeded to discuss the heating of dwellings.

In the average dwelling heated with steam, hot water or hot air, he said, one finds a deplorable lack of humidity, as the air coming in from the outside with a normal amount of humidity ranging from 65 to 75 per cent will be reduced to a humidity of 40 to 45 per cent before reaching the occupants. This humidity is far too low and causes evaporation from the body. It then becomes necessary to raise the temperature to 70 degrees or higher. With a normal humidity of 65 per cent, a temperature of 65 degrees would be quite comfortable.

This humidity can be maintained by keeping the water tanks of the hot air furnaces well filled. Another practical method and one which may add to the appearance of the room is to place green plants, ferns for example, in the windows. These plants, when properly watered, will evaporate a pint of water daily. Wide shallow vases or pans, filled with water, may also be placed in the several rooms of the house. Where a coal stove is used, a pan of water should be kept on the stove at all times.

The commercial method of atmospheric conditioning has often been advocated in cases where the money was easily available.

Dr. Picardy has been active in all health and sanitation affairs in Montreal and his advice has considerable influence among the people.

THE APPRENTICESHIP SYSTEM IN AUSTRALIA

The Australian government has laid the foundation for a future supply of journeyman plumbers and workers in other trades by regulating the apprenticeship system in such a way that the interests of all parties concerned are well taken care of, according to their claims.

Apprentices are paid, cared for, instructed, and entertained and amused, according to certain carefully prepared laws. In certain districts, instruction from a state or continuation trade school must be taken by the apprentices for not less than five hours a week and for not less than three years' time. The schools must be approved by the authorities and the time in school is paid for by the employer.

If the apprentice elects to take a course on his own time, allowance is made for this upon starting his term of apprenticeship. Apprentices are allowed all holidays or are paid for services on such days at the wage rate allowed for regular journeymen. All disputes between apprentices and employers must be settled by the board which has the power to impose punishment in the shape of a fine.

A CUTOUT

"They tell me Jackson went to the hospital for an operation."

"What did he have?"

"Three hundred dollars."

"I mean what did they operate on him for?"

"Three hundred dollars." F. S. K., Cleveland, O.

THE STUDIOUS PLUMBER

Jimmie Jones was a plumber bright, who worked all day and studied by night.

Figured it out with many changes; estimated buildings; also ranges.

His business grew and his force increased, but Jimmy ne'er from his study ceased.

He withstood alone his enemies' chaff, but now on them he has the laugh!

While they ride in their old tin can

Jimmy blows by in a big sedan!

QUINN, Ogden, Utah.

FAMOUS LAST LINES

"WATCH ME PASS THAT GUY!"

MISS C. H., Topeka, Kan.

(What's your last line?)

EPITAPH

Here lies a man
Named Mr. Beek,
A railroad tie
Caressed his neck.

F. P. W., Scranton, Pa.

HE WAS SO IGNORANT

—he thought insect powder was made in a bughouse.

FELIX, New York.

WITHIN THE LAW

Sheriff—"Hey, there's no swimmin' allowed in this pond!"

Lovely Vision—"Oh, why didn't you tell me before I got undressed?"

Sheriff—"Well, I reckon there ain't no law agin' that!"

P. B., Louisville, Ky.

ANOTHER K-K-K

Teacher—"Elmer, you are half an hour late. What was the matter?"

K K K Elmer—"I went out with papa to a lynching party and we stayed until the last man was hung."

Teacher (severely)—"Was hanged, Elmer."

R. A. N., Boston, Mass.

FOOLISHMENT

He kissed her in the garden
When the moon was shining bright;
But she was a marble statue, and
He was drunk that night.

R. C., Springfield, Ill.

"I hear that Santa's whiskers are so long they sweep the floor."

"I see. Sort of a whisk-broom, eh?"

SPAFF, Buchanan, Mich.

THE OLD JOKE MADE OVER

"Who was that lady I saw you with on the street the other night?"

"That wasn't a street—it was an alley."

S. D., Dayton, O.

Along about the 15th of January, when the Xmas bills come in, don't forget that then is the time to test the strength of your New Year's resolutions. OLE ANDER.

90% Grease Traps A Farce

The capacity of every grease trap should be measured up according to the size and kind of building in which it is installed, the same as a suit of clothes is measured up for each individual.

Water Cooling Grease Traps are the only satisfactory grease traps to install. These will perform their function to the entire satisfaction of all concerned.

Approved and recommended by Architects and Sanitary Designers everywhere.

1897 DEHNSANIGARD THE QUALITY GOODS 1923

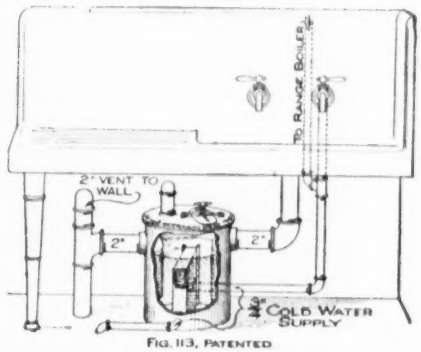


FIG. 113, PATENTED

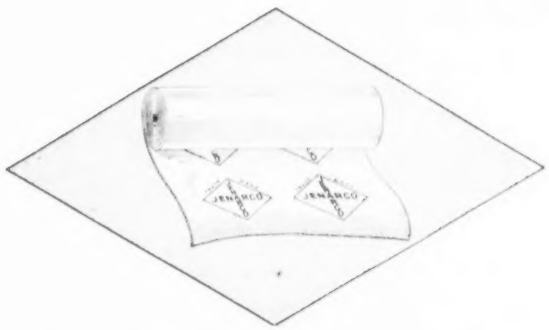
Dehn's "ACME" Water Cooling Grease Trap, a Satisfactory Installation

Compound Injector & Specialty Co

Originators, Designers and Sole Manufacturers of

DEHNSANIGARD THE QUALITY GOODS

419-421 D-N. Laramie Avenue Chicago, Illinois, U. S. A.



Durable Packing for Every Purpose

Good service is obtained from Jenkins Packings because they contain the proper ingredients. The formulas are the result of years and years study and experience in packing manufacture.

Packing in sheets or cut gaskets for every purpose:

For saturated steam, water, or air, at high or low pressures use *Jenkins '96*, *Jenarco* or *Jenkins Magnolia* packing. For oils use *Jenkins Oiltite*, and for superheated steam, use *Jenkins Compressed Asbestos Jointing*. They are tough flexible packings that make tight joints.

JENKINS BROS.

New York Boston Philadelphia Chicago
Montreal London

JENARCO Jenkins Packing 96 96 96 96 96 96

BEAD CHAIN
The Jump Ring Coupling
BEAD CHAINS have patented Jump Ring Couplings fastened to both ends, and may be easily installed without taking along any special attachments or cutting the chain on the job.
These Jump Ring Couplings are easily attached, but on account of their patented construction, cannot accidentally be dislodged from the ends of the chain. Because of the thickness of the eyelet, even an improperly closed Jump Ring would not cause the chain assembly to become detached from either fixture or plug.
Specify Bead Chain on your next contract.
THE BEAD CHAIN MFG. COMPANY
BRIDGEPORT CONNECTICUT
USE
BEAD CHAIN
FOR PLUMBING

NEW BEDFORD, MASS., MASTER PLUMBERS' ANNUAL DINNER

Members of the New Bedford, Mass., Master Plumbers' Association recently held their annual dinner at the Lincoln Hotel in that city. The local association includes members from Fairhaven, Acushnet and Dartmouth. The necessity of selling merchandise as well as labor, was emphasized by Edwin H. Cox, of Boston, past president of the state association.

WESTCHESTER ASSOCIATION TO HOLD LADIES' NIGHT

The Master Plumbers' and Steamfitters' Association of Westchester County, N. Y., will hold its third annual ladies' night, at Lawrence's Inn, Mamaroneck, N. Y., on Thursday evening, December 13. The festivities will commence at 7:30 p. m., and affairs will be in charge of Louis Young, who is chairman of the special committee appointed for this function.

DETROIT MASTER PLUMBERS' CLUB ENTERTAINED BY HOFFMAN HEATER MAN

The East Side Educational club, composed of master plumbers of Detroit, Mich., was given a real treat one evening recently in the way of a fish fry by Roy Thatcher, Detroit representative of the Hoffman Heater Co. One hundred pounds of fried fresh perch and white fish were served to the seventy members of the club.

SOUTH BEND, IND., CONTEMPLATES PLUMBING CODE

Committees of the South Bend, Ind., city council are considering a building and plumbing code and are studying similar codes as adapted by various cities.

WACO, TEXAS, CREATES POSITION OF CITY PLUMBING INSPECTOR

Through the efforts of the master plumbers of Waco, Texas, the city commission will create the office of city plumbing inspector at a salary of $150 per month.

YORK, PA., ASSOCIATION OF MASTER PLUMBERS PLANS ANNUAL BANQUET

The York, Pa., Association of Master Plumbers is planning to hold its annual banquet Thursday evening, December 20. Col. W. G. Archer, of the National Trade Extension Bureau, will deliver an address.

LECTURE DATES OF THE NATIONAL TRADE EXTENSION BUREAU

B. Jos. O'Donnell: December 3 to 13, Louisville, Ky.; 15 to 21, Indianapolis, Ind.

Wm. G. Archer: December 5, Johnston, Pa.; 6, Philadelphia, Pa.; 10, Atlantic City, N. J.; 11, Camden, N. J.; 12, Trenton, N. J.; 13, Newark, N. J.; 14, Elizabeth, N. J.; 17, Jersey City, N. J.; 18, Montclair, N. J.; 20, York, Pa.

Any travelers in the plumbing and heating field who might be wandering in the vicinity of Kansas City, Mo., the evening of December 22, are invited to the Christmas frolic which will be held at the home of Mr. and Mrs. E. D. Hornbrook, 521 Garfield avenue. The latch-string will be out.

Tables, Rules and Calculations for the Plumber

(Continued from Page 485)

of its bulk, or from 1000 to 1083. Fifteen hundred and ninety-five cubic inches of water will expand in freezing to one cubic foot of ice, which weighs approximately 57.15 lb.

Water is from 10 to 12 times heavier than an equal volume of snow. Water freezing in a pipe or closed receptacle exerts a pressure of approximately 2,000 lb. per square inch, which is the force that causes pipes to burst.

Table IV

Showing Pressure of Water at Different Elevations

Head in ft.	Pressure in lb. per sq. in. at base	Head in ft	Pressure in lb. per sq. in. at base
1	.43	185	80.14
2	.86	190	82.30
3	1.30	195	84.47
4	1.73	200	86.63
5	2.16	205	88.80
10	4.33	210	90.96
15	6.49	215	93.14
20	8.66	220	95.30
25	10.82	225	97.49
30	12.99	230	99.63
35	15.16	235	101.79
40	17.32	240	103.96
45	19.49	245	106.13
50	21.65	250	108.29
55	23.82	255	110.46
60	25.99	260	112.62
65	28.15	265	114.79
70	30.32	270	116.96
75	32.48	275	119.12
80	34.65	280	121.29
85	36.82	285	123.45
90	38.98	290	125.62
95	41.15	295	127.78
100	43.31	300	129.95
105	45.48	310	134.28
110	47.64	320	138.62
115	49.81	330	142.95
120	51.98	340	147.28
125	54.15	350	151.61
130	56.31	360	155.94
135	58.48	370	160.27
140	60.64	380	164.61
145	62.81	390	168.94
150	64.97	400	173.27
155	67.14	500	216.58
160	69.31	600	259.90
165	71.47	700	303.22
170	73.64	800	346.54
175	75.80	900	389.86
180	77.97	1000	433.18

Note: For pressure not given in this table multiply head in ft. by 0.434; the product will be the pressure per square inch at base.

Table V

Circumference and Area of Circles

From 1 inch to 35 inch

Diameter	Circumference in Inches	Area in Square Inches
1 in.	3.1416	.7854
1¼ in.	3.9260	1.2272
1½ in.	4.7124	1.7671
2 in.	6.2832	3.1416
2½ in.	7.8540	4.9087
3 in.	9.4248	7.0686
3½ in.	10.9956	9.6211
4 in.	12.5664	12.5664
5 in.	15.7080	19.6350
6 in.	18.8496	28.2744
7 in.	21.9912	38.4846
8 in.	25.1328	50.2656
9 in.	28.2744	63.6174
10 in.	31.4160	78.540
11 in.	34.5576	95.033
12 in.	37.6992	113.098
13 in.	40.8407	132.7323
14 in.	43.9823	153.9380
15 in.	47.1239	176.7146

The POWERS SHOWER MIXER

Completely eliminates those unexpected "shots" of cold and hot water common to the shower bath equipped with the ordinary mixer.

How it works. A simple all-metal pressure balancing valve instantly equalizes the pressure of hot and cold water before they enter the mixing chamber, so that regardless of pressure changes when adjoining showers or other plumbing fixtures are used, a Powers Mixer always holds the temperature of the water where you want it.

4 Styles

May we send you Bulletin 154 which gives full information

THE POWERS REGULATOR CO.
Specialists in Automatic Heat Control
2716 Greenview Ave., CHICAGO
NEW YORK
BOSTON
TORONTO
And 28 Other Offices
Your telephone directory will tell you if our office is in your city
2455

Over 2,000,000 in Use

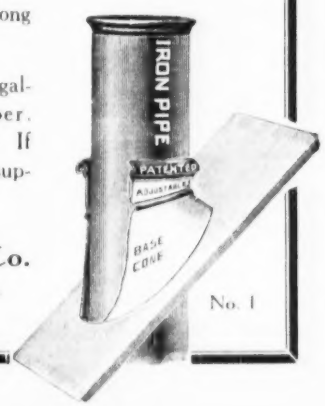
The Hessler Adjustable Roof Flange

Installing a Hessler Roof Flange is such a quick and simple procedure it is no wonder they are so popular with plumbers.

Put up in ten minutes time without helper. No hot lead, oakum or putty. No tools needed except a hammer, yet the Hessler Flange will last as long as the building.

Made in six sizes, in galvanized and copper. Reasonably priced. If your jobber cannot supply you, we can.

H. E. Hessler Co.
Syracuse, N.Y.



No. 1

Capitol Products Always Satisfy

WE MAKE a full line of Steam Valves, Engine and Boiler Trimmings, Bath Cocks, Basin Cocks, and Plumbers' Brass Goods. CAPITOL products are made to give service and satisfaction. Write for our Catalog No. 12, which fully illustrates and describes the entire CAPITOL line.

Radiator Valves

Our Radiator Valves have been standard for over a quarter of a century. Made in standard or packless types. Also Gate, Globe, Check, Pop and Lavatory Valves. No better valves made than you will find in the CAPITOL line. When in the market for valves, be sure to consider the CAPITOL line.

No. 41

Combination Sink Bibb

The item illustrated is one of our most popular designs. Several other styles from which to choose including our "Mixo" Bath Faucets. All made of highest grade virgin metals.

No. 421A-(Patent applied for)

Laundry Tray Bibbs

Item illustrated is very popular. Clamps are reversible. Also furnished with wall brackets and without unions. Figure on CAPITOL Brass Goods when estimating, and insure your customer a lasting and satisfactory job. Quality pays.

No. 420 (Patent applied for)

Capitol Brass Works
Detroit Mich.

16	in.	50.2655	201.0619
17	in.	53.4071	226.9801
18	in.	56.5487	254.4690
19	in.	59.6903	283.5287
20	in.	62.8319	314.1593
21	in.	65.9734	346.3606
22	in.	69.1150	380.1327
23	in.	72.2566	415.4756
24	in.	75.3982	452.3893
25	in.	78.5398	490.8739
26	in.	81.6814	530.9292
27	in.	84.8230	572.5553
28	in.	87.9646	615.7522
29	in.	91.1062	660.5199
30	in.	94.2478	706.8583
31	in.	97.3894	754.7676
32	in.	100.5310	804.2477
33	in.	103.6726	855.2986
34	in.	106.8142	907.9203
35	in.	109.9557	962.1127
36	in.	113.0973	1017.8760

Note: Area = Circumference multiplied by 3.1416

Table VI

Conversion Table—Liquid to Cubic, and Vice Versa

		Gills	Pints	Qts.	Gals.	Cu.In.	Cu.Ft.	Cu.Yds.
1 gill	=	1	.25	.125	.031	7.22	.00418	.000155
1 pint	=	4	1	.5	.125	28.88	.0167	.00062
1 quart	=	8	2	1	.25	57.75	.0334	.00124
1 gallon	=	32	8	4	1	231	.134	.00975
1 cu. in.	=	.139	.0345	.0173	.0043	1	.00058	.00002
1 cu. ft.	=	239.4	59.8	29.9	7.5	1728	1	.037
1 cu. yd.	=	6464	1615	807	102.5	46656	27	1

Table VII

Showing the Relative Discharging Capacities of New Smooth Pipes

	—Inches—											
	½	⅝	¾	1	1¼	1½	2	2½	3	4	6	8	10
½ in.	1												
⅝ in.	1.7	1											
¾ in.	2.9	1.7	1										
1 in.	6.2	3.5	2.1	1									
1¼ in.	10.9	6.2	3.7	1.8	1								
1½ in.	17.4	10.0	6.0	2.8	1.6	1							
2 in.	37.8	21.7	13.0	6.1	3.5	2.1	1						
2½ in.	65.5	37.5	23.1	10.7	6.1	3.8	1.8	1					
3 in.	110.5	63.2	38.0	17.9	10.1	6.3	2.9	1.6	1				
4 in.	189.0	108.3	65.0	30.6	17.3	10.8	5.0	2.8	1.7	1			
6 in.	527	302	186	87	49	30.5	14.2	8	4.8	2.8	1		
8 in.		550	4.8	195.5	108.6	67.2	31.6	17.9	11.2	6.0	2.1	1	
10 in.								31.9	19.7	10.6	3.7	1.8	1

Explanation of Table of Relative Pipe Diameters

The figures in the body of the above Table VII give the number of pipes of a given diameter that are equal to one pipe of a larger diameter.

This table is based on conditions similar to those at a residence or other small building. For power plant or other similar conditions the table is only approximate.

Example: How many ½-inch pipes are equal to one ¾-inch pipe?

Under column marked ½-inch at top of table follow down column to figure opposite ¾-inch and read 2.9; that is to say, a ¾-inch pipe has a carrying capacity equal to about three ½-inch pipes.

Example: What diameter of pipe will be required to supply three ½-inch pipes, one ⅝-inch pipe and one ¾-inch pipe?

Solution: Reduce all of the pipes to equivalent of ½-inch pipes.

Three ½-inch pipes = 3.0.

One ⅝-inch pipe = 1.7.

One ¾-inch pipe = 2.9.

The combination = 7.6 ½-inch pipes.

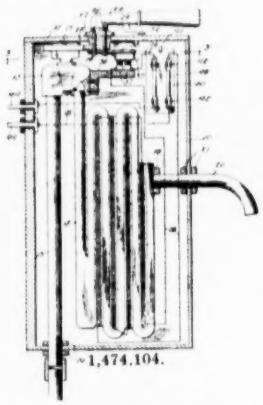
From the table we see that a one-inch pipe equals 6.2 one-half inch pipes and a one and one-fourth inch pipe equals 10.9 one-half inch pipes. As we require the equivalent of 7.6 one-half inch pipes, it would be necessary to use a one and one-fourth inch pipe to supply the above combination.

George Notterman has sold his place of business at Bonner Springs, Kans., and has moved to Los Angeles, Cal., where he is at present working as a journeyman. He expects to enter business again in the near future.

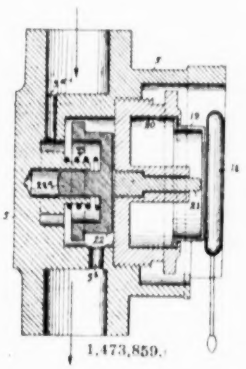
Patents

PLUMBING DEPARTMENT

1,474,104. Electric Water Heater. William Edgar Burgess, New Orleans, La., assignor of one-fifth to George F. Spence and two-fifths to Adolph Steinhardt, both of New Orleans, La. In an electric water heater, a heating column, a heater for heating the column, means controlling energization of the heater, means operating the first means and controlling flow of water through the column movable from a position permitting maximum flow to restrict the flow and simultaneously energize the heater, and means limiting the second means to permit partial flow when the heater is energized.



1,474,104.



1,473,859.

1,473,859.—Gas-Heated Water-Heating Apparatus. Henri Jules Maladry, Paris, France. A thermostatic valve for gas-heated water-heating apparaus, the combination of: a valve casing (5), forming an annular chamber and having an admission port (5a) and an exit port (5b) for the gas; a cup-shaped valve (22) having a central stem (22a), mounted within said casing and adapted to control the passage of the gas therethrough from the admission port towards the exit port; a guiding sleeve for said central stem, integral with said casing; a coil-spring (23) arranged in the aforesaid cup-shaped valve and normally tending to keep same away from its seat; a stationary cup-shaped guide-member (20) mounted laterally in the wall of the valve-casing coaxially and back to back with the cup-shaped valve and having an integral central sleeve; a piston (21) extending within the last-named sleeve and having one end in operative contact with said cup-shaped valve; a flanged dish-like member (19) slidably mounted in the aforesaid stationary guide-member and in operative contact with the other end of said piston; and a thermostatic capsule expansible by heat (18), having one face in operative contact with the said dish-like member; substantially as described.

* * *

1,474,288. Water-Closet Valve. Henry Arthur Rath, Elizabeth, N. J. The combination with a tank, of an outlet pipe connected thereto and having its upper end formed with a valve seat, an upright branch outlet pipe connected to the first named outlet pipe beneath said valve seat and terminating a substantial distance above the valve seat, the upper end of said branch pipe being formed with a valve seat, an L-shaped overflow pipe connected to said

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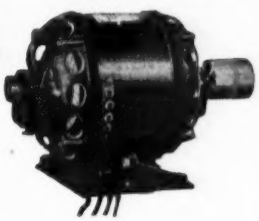

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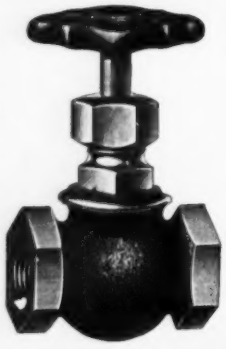

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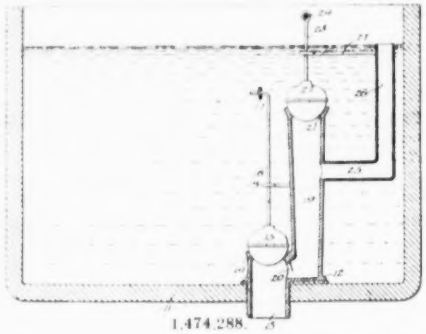
branch outlet pipe intermediate the ends thereof and terminating above said second named valve seat, separate valves mounted on said valve seats and having stems, brackets carried by said overflow pipe and said branch pipe for guiding said stems, and separate means whereby

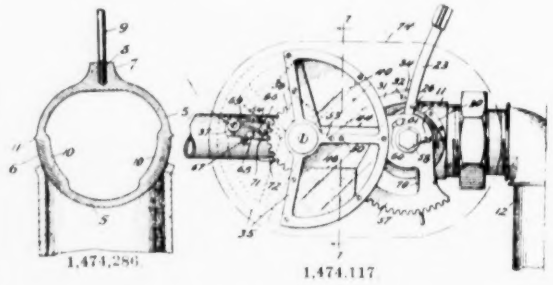


1,474,288.

to manually operate said first and second named valves independently of each other, said branch pipe establishing communication between said outlet and overflow pipes.

* * *

1,474,286. Hard-Rubber Flush Ball for Water-Closet Tanks. Julius Phillips, Trenton, N. J., assignor to the Luzerne Rubber Company, Trenton, N. J. A device of the class specified, consisting of a jointless hard rubber body of substantially spherical form, having a soft rubber member integral therewith and circumferentially surrounding said body above the lower portion of the latter.



1,474,286. 1,474,117.

1,474,117. Flushing Valve. Joseph P. Meyer, Rochester, N. Y. In a device of the class described the combination with a valve, of manually operable means for opening it, means for closing it, and means for causing said closing means to operate at the expiration of a predetermined time after opening, including a timer of hour-glass form, and means actuated by the opening means for moving said hour-glass timer to operative position.

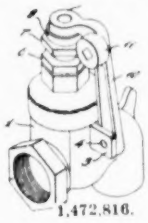
* * *

1,472,816. Faucet. William H. Smith, East Cleveland, Ohio. A faucet comprising a casing having a lug thereon, a valve in said casing having a stem projecting therethrough, a detachable wrench having a handle and a pair of socket members thereon, one of said members being engageable with said stem to position said handle in an operative position, and the other of said members being engageable with said stem to position said handle adjacent said lug whereby said parts may be locked to render said valve inoperative.

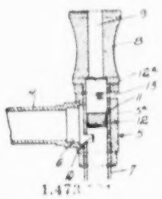
* * *

1,473,501. Drinking Fountain. William E. Munslow, Steubenville, Ohio. In a device of the character described, a tubular member provided with a head in direct communication with said member and disposed substantially at right angles thereto, a hollow valve open at both ends rotatably mounted through said head and provided with

openings in its peripheral wall spaced apart axially and circumferentially of the valve, and a plug within the valve between said openings, said plug being adjustable axially



1,472,816.

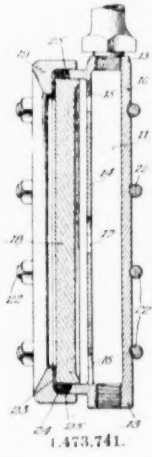


1,473

of the valve for varying the effective size of one of said openings.

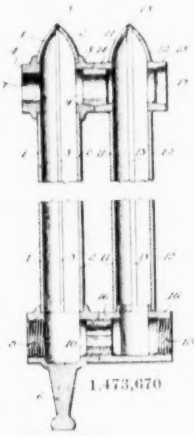
HEATING DEPARTMENT

1,473,741. Water Gauge. George H. Sargent, Chicago, Ill. A water gauge, comprising a body member formed to provide a chamber having openings in the top and bottom walls and provided with an apertured partition disposed from top to bottom at a point forward of said top and bottom openings, said body member being also formed with a gland-forming rim disposed forwardly of the partition to provide a glass-receiving socket, a sight-glass arranged within said socket in spaced relation with said partition to provide a water chamber therebetween, a cover member having a sight opening and adapted to receive said gland-forming rim of the body member and said sight-glass, a packing element located in the cover member forward of the gland-forming rim and adapted to encircle the edges of the sight-glass to maintain the latter in place, and means whereby the body member and cover member are adjustably secured together and the packing element compressed into relation with the sight-glass.



1,473,741.

1,473,844.



1,473,670

1,473,844. Gas-Heating Radiator. Andre Garbarini, Courbevoie, France. A hydrocarbon vapor heating radiator comprising a stand forming a reservoir for liquid fuel, a parabolic mirror pivoted on said stand, a burner for the hydrocarbon vapor fixed to the center of the mirror, an incandescent device on said burner, an ascension tube for the liquid adapted to permit a variable inclination of the mirror, and means to secure ascension of the liquid fuel from the stand to the burner.

* * *

1,473,670. Method of Forming Radiators. David Nelson Crosthwait, Sr., Kansas City, Mo., assignor to David Nelson Crosthwait, Jr., Marshalltown, Iowa. The method of constructing a radiator section of stamped metal and cast metal, which includes stamping two complementary

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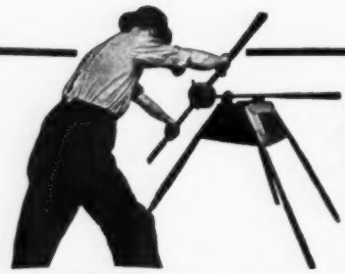

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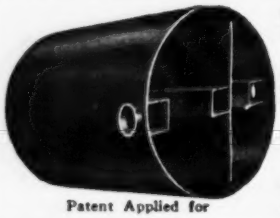

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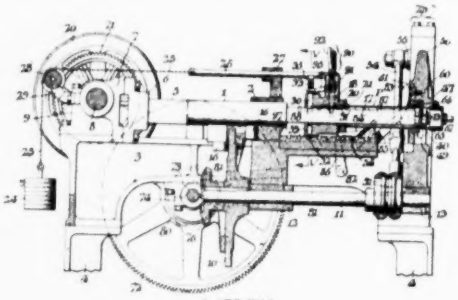
walls of the section from sheet metal, forming a mold and a core for the radiator section, assembling the stamped metal walls and core, and placing them in the mold, and then pouring in the molten metal.

* * *

1,473,756. Pipe-Bending Machine. Joah Brogden, Melrose Park, Pa., assignor to David Lupton's Sons Company, Philadelphia, Pa. A machine for bending pipes of rectangular cross section, comprising die mechanism, including a matrix in the form of a head, over which the pipe

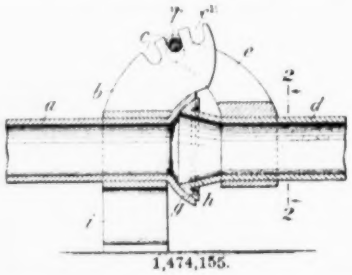


1,473,756

to be bent is mounted, said head having a configuration corresponding accurately to the interior of the pipe and also a perimetrical forming groove; and opposed diagonally movable complementary male die elements having obtuse bights adapted to force the metal of the pipe into the forming groove of said matrix.

* * *

1,474,155. Pipe Joint. Walter Krause, Friesack, Germany. In a pipe joint, the combination, with the pipes to be connected having contacting faces, of a supporting arm of open-notch formation on one of said pipes, a foot extending down from the same pipe, and a suspension arm



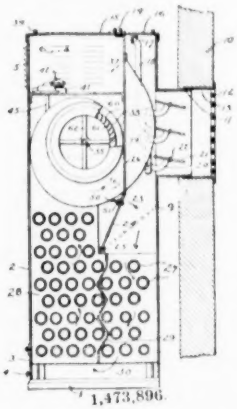
1,474,155.

secured to the other pipe and having a fulcrum member movable with said other pipe and movable into and out of the open end of the notch in the notched portion of said supporting arm, whereby the pipe having the suspension arm may be readily connected with the other pipe, or disconnected therefrom, without disconnecting the fulcrum member from the pipe carrying it.

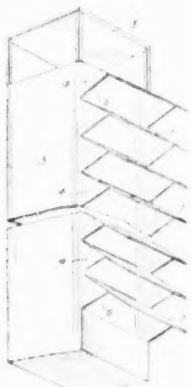
* * *

1,473,896. Heating and Ventilating Equipment. Jay Austin Wolfe, Columbus, Ohio, assignor to The Columbus Heating and Ventilating Company, Columbus, Ohio. In combination a casing having a bottom, top and side walls, a partition extending between two opposite sides of the casing and located between the two remaining sides of the casing, said partition extending vertically in spaced relation to the bottom of the casing and terminating at its upper edge a considerable distance below the top of the casing, a damper having its lower edge pivoted within the casing at the top of the partition, said casing having an air inlet at one side of the partition and an air outlet at the other side of said partition, a heater in said casing lying wholly below the top of the partition on the side

adjacent the air inlet, a second heater on the other side of the partition and projecting above the top thereof, a second partition depending from the top of the casing and having its lower edge engageable by the free edge of the damper, said damper being also engageable at its free edge with the wall of the casing below the inlet opening, and means to adjust the position of the damper.



1,473,896.

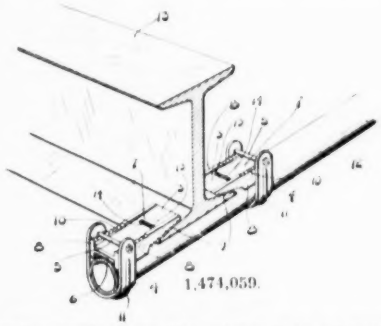


1,474,072.

1,474,072. Ventilating Flue. Carl H. Dahmen, Allentown, Pa. A ventilating flue about which material may be stacked, said flue having attached thereto angularly disposed plates of such length that the lower ends of the plates will overlie the upper edges of adjacent plates to provide inlet openings to the interior of the flue, and serrations projecting from the edges of the flue.

* * *

1,474,059. Pipe Hanger. Carl H. Voellmecke, Cincinnati, Ohio. A pipe hanger comprising in lieu thereof an adjustable wedge consisting of two transversely adjustable elements having a toothed supporting member engaging surface on the under face of each element, a notched



1,474,059.

bolt engaging surface on the upper face of each element, a pipe embracing strap, and a bolt adapted to occupy the notches of the bolt engaging surface and to retain the strap in embracing engagement with a pipe to be supported.

ANSWER TO WHAT'S WRONG IN THIS PICTURE

The Picture is on Page 496.

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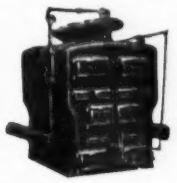

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